United Nations A/CONF.230/3

General Assembly

Distr.: General
2 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 6 of the provisional agenda*
Organization of work, including the establishment of subsidiary bodies, and other organizational matters

Organizational and procedural matters

Note by the Secretariat

1. The proposals set out in the present note have been prepared on the basis of General Assembly resolution 70/303 of 9 September 2016.

I. Election of officers

2. The Conference shall elect two Presidents and other officers in accordance with its rules of procedure. As stipulated in rule 6, the Conference shall elect from among the representatives of participating States the following officers: two Presidents, one from Fiji and one from Sweden, each presiding separately, and 13 Vice-Presidents,[1] one of whom shall be designated as Rapporteur-General, as well as a chair for the Main Committee established in accordance with rule 46. The officers shall be elected with a view to ensuring the representative character of the General Committee. The Conference may also elect such other officers as it deems necessary for the performance of its functions.

II. Adoption of the rules of procedure

3. The Conference shall adopt its rules of procedure. The provisional rules of procedure, as approved by the General Assembly in its resolution 70/303, are contained in document A/CONF.230/2.

* A/CONF.230/1.

[1] Three from each of the following groups: African States; Asia-Pacific States; Eastern European States; Latin American and Caribbean States; and Western European and other States. The election of the two Presidents will, however, have the effect of reducing by one the number of Vice-Presidents allocated to the regions from which each of the Presidents is elected.

17-06975 (E) 170517

Please recycle

III. Adoption of the agenda

4. The Conference will have before it for adoption the provisional agenda (A/CONF.230/1), as recommended by the General Assembly in its resolution 70/303.

IV. Organization of work

A. Dates and venue

5. The Conference will be held at United Nations Headquarters in New York from 5 to 9 June 2017. The overarching theme of the Conference shall be "Our oceans, our future: partnering for the implementation of Sustainable Development Goal 14". The General Assembly, in its resolution 70/303, encouraged participation in the Conference at the highest possible level.

B. Plenary meetings

6. The Conference will consist of a total of eight plenary meetings, to be held as follows:

Monday, 5 June: from 10 a.m. to 1 p.m.

Tuesday, 6 June: from 10 a.m. to 1 p.m. and from 3 to 6 p.m.

Wednesday, 7 June: from 10 a.m. to 1 p.m. and from 3 to 6 p.m.

Thursday, 8 June: from 3 to 6 p.m.

Friday, 9 June: from 10 a.m. to 1 p.m. and from 3 to 6 p.m.

7. All plenary meetings will be held in the General Assembly Hall.

8. At the formal opening of the Conference, to take place during the plenary meeting to be held on the morning of Monday, 5 June, consideration will be given to all procedural and organizational matters, including the adoption of the rules of procedure and the agenda, the election of the two Presidents of the Conference, the election of officers, the establishment of subsidiary bodies, if needed, the appointment of the members of the Credentials Committee, arrangements for the preparation of the report of the Conference and other matters. At the opening, statements will be made by the Presidents of the Conference, the Secretary-General of the United Nations, the President of the General Assembly, the President of the Economic and Social Council and the Secretary-General of the Conference.

9. The eight plenary meetings will be devoted to statements in the general debate. The list of speakers for the general debate will be established on a first-come first-served basis, under the customary protocol that ensures that Heads of State or Government speak first, followed by other heads of delegation. The European Union will be included in the list of speakers. It is proposed that a time limit of five minutes be established for each oral statement. The list of speakers will be announced in the daily Journal of the United Nations.

10. In addition, the general debate, in accordance with General Assembly resolution 70/303 and time permitting, will also hear statements from representatives of other intergovernmental organizations, associate members of regional commissions and the United Nations specialized agencies, funds and programmes, as well as major groups and other stakeholders, including

non-governmental organizations, civil society organizations, academic institutions, the scientific community, the private sector and philanthropic organizations.

11. The closing plenary meeting, to be held on the afternoon of Friday, 9 June, is expected to conclude with reporting on the partnership dialogues, to be followed by the adoption of the "Call for Action" and of the report of the Conference.

C. Partnership dialogues

12. The Conference will include seven partnership dialogues, to be held in parallel with the plenary meetings, as follows:

Monday, 5 June, from 3 to 6 p.m., on the topic "Addressing marine pollution"

Tuesday, 6 June, from 10 a.m. to 1 p.m., on the topic "Managing, protecting, conserving and restoring marine and coastal ecosystems"

Tuesday, 6 June, from 3 to 6 p.m., on the topic "Minimizing and addressing ocean acidification"

Wednesday, 7 June, from 10 a.m. to 1 p.m., on the topic "Making fisheries sustainable"

Wednesday, 7 June, from 3 to 6 p.m., on the topic "Increasing economic benefits to small island developing States and least developed countries and providing access for small-scale artisanal fishers to marine resources and markets"

Thursday, 8 June, from 3 to 6 p.m., on the topic "Increasing scientific knowledge, and developing research capacity and transfer of marine technology"

Friday, 9 June, from 10 a.m. to 1 p.m., on the topic "Enhancing the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea"

13. All partnership dialogues will be held in conference room 4 and will be open to all conference participants, with designated seating.

14. Each partnership dialogue will be presided over by two co-chairs, one from a developing country and one from a developed country, to be appointed by the Presidents of the Conference. The Secretary-General of the Conference will select a moderator and up to four panellists for each of the partnership dialogues.

15. The seven partnership dialogues will be interactive and multi-stakeholder in nature and will focus on recommendations to support the implementation of Sustainable Development Goal 14, including through strengthened cooperation, building on existing successful partnerships and stimulating innovative and concrete new partnerships. The partnership dialogues will begin with a panel discussion, followed by an interactive dialogue among participants. Interventions in the interactive debate will be limited to three minutes. Participants are encouraged to focus on concrete solutions to addressing challenges and gaps in the implementation of Goal 14 targets by presenting voluntary commitments and partnerships as well as policy recommendations to support the implementation of Goal 14.

16. The order of speakers for each partnership dialogue will be determined on a first-come, first-served basis, bearing in mind equitable geographical distribution while allowing for some flexibility, with priority given to States according to the level of representation, followed by intergovernmental organizations and other

entities, associate members of regional commissions, United Nations specialized agencies, funds and programmes, major groups and other relevant actors. It is envisaged that up to 25 States and 15 other participants will be accommodated to speak in the interactive debate of each partnership dialogue.

17. States and the associate members of regional commissions participating in the Conference are requested to indicate two partnership dialogues in which they would like to have a speaking slot, including the order of preference, name, title and level of participation, to the Secretariat, addressed care of Ms. Mary Muturi (muturi@un.org), before 19 May 2017. Representatives of intergovernmental organizations and other entities, specialized agencies and related organizations, and United Nations organs are also requested to indicate two partnership dialogues in which they would like to have a speaking slot, including the order of preference, name, title and level of participation, to the Secretariat, addressed care of Ms. Federica Pietracci (pietracci@un.org), before 19 May 2017. Representatives of non-governmental organizations and other major groups as well as other stakeholders are requested to indicate two partnership dialogues in which they would like to have a speaking slot before 24 April 2017 by using the form available on the website of the Conference (oceanconference.un.org/stakeholderengagement) Additional guidance on the partnership dialogues and the concept notes will be posted on the Conference website.

18. Summaries of the partnership dialogues will be presented to the Conference at its closing plenary meeting and will be included in the final report of the Conference.

D. Special event commemorating World Oceans Day

19. The special event commemorating World Oceans Day will be held on 8 June 2017, from 10 a.m. to 1 p.m. The event will include various segments highlighting the wonders of our "blue planet", oceanic science and exploration. It will also feature examples of the Sustainable Development Goals in action, as well as the contribution of youth to the sustainable development and management of the oceans. Additional information on the special event will be made available on the Conference website. The delegation of each State participating in the Conference and the delegation of the European Union will be assigned two seats each: one seat at a table and one adviser seat. Additional seats will be available to delegations on a first-come, first-served basis, while observers will have access to a designated seating area, also on a first-come, first-served basis.

E. Main Committee

20. The Main Committee, established in accordance with rule 46 of the rules of procedure of the Conference, will meet, if necessary, in parallel with plenary meetings, except during the opening and closing meetings, and will be responsible for finalizing any outstanding matters.

F. Timetable for the work of the Conference

21. A proposed timetable for the work of the Conference is contained in the annex to the present note. Updated information will be posted on the Conference website and announced in the daily Journal of the United Nations.

G. Organization of meetings, parallel meetings and other events of the Conference

22. Meetings will be held from 10 a.m. to 1 p.m. and from 3 to 6 p.m. To ensure the most efficient utilization of available resources, it is essential that all meetings start promptly.

23. Parallel meetings and other events, including those of major groups and other stakeholders, will be held during the same hours as the plenary meetings and partnership dialogues, space permitting. Interpretation services will be provided for such meetings, as available.

24. Side events, including briefings, seminars, workshops and panel discussions on issues related to the implementation of Sustainable Development Goal 14, will be organized by participants in the Conference. Guidelines for organizing such events and the calendar of those events will be made available on the Conference website.

V. Appointment of the members of the Credentials Committee

25. Rule 4 of the rules of procedure of the Conference provides that a Credentials Committee of nine members shall be appointed at the beginning of the Conference. It will examine the credentials of representatives and report to the Conference without delay.

VI. Participants

26. States Members of the United Nations, members of the specialized agencies and parties to the United Nations Convention on the Law of the Sea, intergovernmental organizations and other entities that have received a standing invitation from the General Assembly to participate in the capacity of observers in the sessions and work of the Assembly, associate members of the regional commissions, specialized agencies and related organizations, other intergovernmental organizations, United Nations organs, non-governmental organizations and other major groups will participate in accordance with the rules of procedure of the Conference.

VII. Secretariat

27. The Secretary-General of the Conference will serve as focal point within the Secretariat for providing support to the organization of the Conference, in cooperation with the representatives of the two Presidents. In October 2016, the Secretary-General of the United Nations nominated the Under-Secretary-General for Economic and Social Affairs as the Secretary-General of the Conference.

VIII. Documentation

28. In accordance with the practice followed at previous United Nations conferences, the official documentation of the Conference will include documents issued before, during and after the Conference.

29. In accordance with the practice followed at previous United Nations conferences and as set out in annex II to General Assembly resolution 70/303, it is recommended that the Conference adopt a report consisting of the decisions of the Conference, including a "Call for Action", a brief account of the proceedings and a reportorial account of the work of the Conference and the action taken at the plenary meetings.

30. Summaries of the plenary meetings and partnership dialogues and a list of voluntary commitments announced at the Conference for the implementation of Sustainable Development Goal 14 should also be included in the report of the Conference.

31. All Conference documentation will be available on the Conference website.

IX. Media coverage

32. Press materials will be prepared by the Department of Public Information of the Secretariat for journalists covering the Conference. In addition, regular press releases will be issued on the results of plenary meetings, partnership dialogues, the special event commemorating World Oceans Day and other events. All relevant information will be made available on the Conference website.

33. The plenary meetings, the partnership dialogues, the special event commemorating World Oceans Day and the press conferences will be broadcast live to the media area. A programme of special media briefings and press conferences will be announced.

Annex

Proposed timetable for the work of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

New York, 5-9 June 2017

Date/time	*Agenda item/programme*	
Monday, 5 June		
1st plenary meeting		
10 a.m.-1 p.m.	1	Opening of the Conference
	2	Election of two Presidents
	1	Opening statements
	3	Adoption of the rules of procedure
	4	Adoption of the agenda of the Conference
	5	Election of officers other than the Presidents
	6	Organization of work, including the establishment of subsidiary bodies, and other organizational matters
	7 (a)	Appointment of the members of the Credentials Committee
	8	General debate
Partnership dialogue		
3-6 p.m.		Partnership dialogue 1: Addressing marine pollution
Tuesday, 6 June		
2nd plenary meeting		
10 a.m.-1 p.m.	8	General debate
Partnership dialogue		
10 a.m.-1 p.m.		Partnership dialogue 2: Managing, protecting, conserving and restoring marine and coastal ecosystems
3rd plenary meeting		
3-6 p.m.	8	General debate
Partnership dialogue		
3-6 p.m.		Partnership dialogue 3: Minimizing and addressing ocean acidification

Date/time	*Agenda item/programme*	
Wednesday, 7 June		
4th plenary meeting		
10 a.m.-1 p.m.	8	General debate
Partnership dialogue		
10 a.m.-1 p.m.		Partnership dialogue 4: Making fisheries sustainable
5th plenary meeting		
3-6 p.m.	8	General debate
Partnership dialogue		
3-6 p.m.		Partnership dialogue 5: Increasing economic benefits to small island developing States and least developed countries and providing access for small-scale artisanal fishers to marine resources and markets
Thursday, 8 June		
10 a.m.-1 p.m.		Special event commemorating World Oceans Day
6th plenary meeting		
3-6 p.m.	8	General debate
Partnership dialogue		
3-6 p.m.		Partnership dialogue 6: Increasing scientific knowledge, and developing research capacity and transfer of marine technology
Friday, 9 June		
7th plenary meeting		
10 a.m.-1 p.m.	8	General debate
Partnership dialogue		
10 a.m.-1 p.m.		Partnership dialogue 7: Enhancing the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea
8th plenary meeting		
3-6 p.m.	8	General debate
	9	Report of the partnership dialogues
	7 (b)	Report of the Credentials Committee
	11	Outcome of the Conference
	12	Adoption of the report of the Conference
	13	Closure of the Conference

United Nations A/CONF.230/4

General Assembly

Distr.: General
5 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 9 of the provisional agenda*
Partnership dialogues

Addressing marine pollution

Concept paper prepared by the secretariat

I. Introduction

1. The present concept paper for the partnership dialogue on the theme "Addressing marine pollution", prepared pursuant to General Assembly resolution 70/303, relates to target 14.1 of the Sustainable Development Goals. The paper is based on inputs received from Member States, intergovernmental organizations, the United Nations system and other stakeholders.[1]

2. Pollution from human activities can be found all across the ocean's vast expanse: in both deep and shallow areas and within the organisms that live in it. Rivers carry waste, solid and liquid, and a wide range of other substances into the ocean. Discharges, spills and waste from shipping are another source of pollution. Pollutants discharged into the air are also deposited into the ocean. Although considerable progress has been achieved in limiting some forms of pollution, others persist. New challenges, whether relating to specific pollutants (e.g., microplastics) or broader trends (e.g., the rapid growth of coastal cities), will require sustained action that encompasses scientific research, knowledge-sharing and strengthened governance arrangements.

* A/CONF.230/1.
[1] Given the word limit, not all inputs have been included in their entirety, but they can be accessed at https://oceanconference.un.org/documents.

17-06985 (E) 260517

Please recycle

II. Status and trends

3. In article 1 of the United Nations Convention on the Law of the Sea, "pollution of the marine environment" is defined as the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

4. Land-based sources account for approximately 80 per cent of marine pollution globally. Such pollution emanates from a range of sources, including agricultural run-off, untreated sewage and wastewater, oils, nutrients, sediments and marine debris.[2] Agricultural practices, coastal tourism, port and harbour developments, the damming of rivers, urban development and construction, mining, fisheries, aquaculture and manufacturing are just some of the sources of marine pollution that are threatening coastal and marine habitats and the health and well-being of humanity.

5. Nutrient overenrichment from agricultural, municipal and industrial sources is also considered to be the main cause of so-called "dead zones", hypoxic regions that exhibit oxygen levels too low to support many aquatic organisms, including commercially desirable species. The result is the collapse of some ecosystems. The extent and duration of dead zones is increasing worldwide,[3] and there are now close to 500 dead zones covering more than 245,000 square kilometres globally, with the number doubling every 10 years since the 1960s.[4] The economic costs to fisheries, tourism and other coastal livelihoods are already exacting a heavy toll. While rivers are the conduit for organic nitrogen entering the ocean, land-based nitrogen enters it primarily through atmospheric deposition. Expanded observation is necessary to properly characterize the magnitude and effects of those outflows.

6. At least 2 billion people currently lack access to regular waste collection. A large portion of that uncollected waste ends up in waterways and the ocean, becoming marine debris in the process. Marine debris, also known as marine litter, impacts economies, ecosystems, animal welfare and human health worldwide. Approximately 80 per cent of marine debris comes from land-based sources, while the remaining 20 per cent comes from sea-based sources, including maritime transport, fishing and industrial exploration. Plastics are by far the most prevalent debris item recorded, contributing to an estimated 60 to 80 per cent of all marine debris. Research suggests that by 2050 almost 99 per cent of seabirds will have ingested plastics.[5]

---

[2] United Nations Educational, Scientific and Cultural Organization, "Facts and figures on marine pollution" (2016). Available at en.unesco.org. United Nations Environment Programme Global Marine Oil Pollution Information Gateway (2016). Available at oils.gpa.unep.org/about/about.htm.

[3] United Nations, Division for Ocean Affairs and the Law of the Sea, *The First Global Integrated Marine Assessment: World Ocean Assessment I* (Cambridge, Cambridge University Press, 2017). S. S. Rabotyagov and others, "The economics of dead zones: causes, impacts, policy challenges, and a model of the Gulf of Mexico hypoxic zone", *Review of Environmental Economics and Policy*, vol. 8, No. 1 (2014), pp. 58-79.

[4] United Nations Development Programme, "Issue brief: ocean hypoxia — "dead zones" ", 15 May 2013. Available at www.undp.org.

[5] Chris Wilcox, Erik Van Sebille and Britta Denise Hardesty, "Threat of plastic pollution to seabirds is global, pervasive, and increasing", *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, vol. 112, No. 38 (2015), pp. 11899-11904.

7. The impact of marine debris includes entanglement with and ingestion by marine animals, and it has been identified as a global problem.[6] Plastics typically constitute the most substantial part of marine debris, sometimes accounting for up to 100 per cent of floating litter.[7] Plastic debris causes the deaths of large numbers of seabirds and marine mammals. Plastic materials and other litter can become concentrated in areas called gyres, which form when marine pollution is brought together by oceanic currents.

8. It is estimated that abandoned, lost or otherwise discarded fishing gear, also known as ghost fishing gear, accounts for up to 10 per cent of marine debris. Ghost fishing gear has an impact on marine wildlife through entanglement, but also represents a source of marine microplastics. Ghost fishing gear and related marine debris have been addressed by means of instruments related to international fisheries, for example, the Food and Agricultural Organization Code of Conduct for Responsible Fisheries and the Fish Stocks Agreement. In particular, the Fish Stocks Agreement requires States to minimize pollution and catch by lost or abandoned gear, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.

9. Microplastics are a form of marine litter that has been shown to be widespread in the marine environment. Generally defined as plastic fragments with a size between 1 nanometre (one billionth of a metre) and 5 millimetres, microplastics originate from a wide range of sources. They are produced for use as ingredients in personal care and cosmetics products, for example, but they are also created over time through the process of weathering and fragmentation of larger plastic objects in the ocean. There are significant knowledge gaps, but concern has been expressed about the impact of microplastics on marine ecosystems.[8] With regard to human health, it was determined in a study by the United Nations Environment Programme (UNEP) that microplastics in seafood do not currently represent a human health risk, although many uncertainties remain.[9] However, the same study also found that there was still great uncertainty about the possible effects of nano-sized plastic particles, which are capable of crossing cell walls.

10. Sound chemical management is important in preventing marine pollution, protecting ecosystems and conserving biodiversity. In some parts of the world, the efforts of the past 40 years have been successful in reducing or, where possible, eliminating the impact of heavy metals and hazardous substances. The concentrations in the ocean of such metals and substances are now diminishing, for example, in the north-east Atlantic, even though problems persist in some local areas. New technologies and processes that can avoid such problems have also been widely developed, but there are gaps in the capacities to apply those newer processes, often because of the costs involved.

11. Pollution from ships takes the form of both catastrophic events (shipwrecks, collisions and groundings) and chronic pollution from regular operational discharges; however, good progress has been made in reducing both over the past 40 years. Global environmental rules and standards have been developed to regulate most of the ship-related sources of pollution. Steps are now being taken to further strengthen the uniform enforcement of those rules and standards around the globe.

---

[6] *The First Global Integrated Marine Assessment*: report of the Secretary-General on oceans and the law of the sea (A/71/74).

[7] François Galgani, Georg Hanke and Thomas Maes, "Global distribution, composition and abundance of marine litter", in *Marine Anthropogenic Litter*, Melanie Bergmann, Lars Gutow and Michael Klages, eds. (Heidelberg, Germany, Springer, 2015), pp. 29-56.

[8] A/71/204.

[9] United Nations Environment Programme, *Marine Plastic Debris and Microplastics: Global Lessons and Research to Inspire Action and Guide Policy Change* (Nairobi, 2016).

The global regulatory framework includes international conventions addressing the entire life cycle of ships ("from cradle to grave", including design, building, operation and ship recycling) and the certification and training of seafarers.

12. Shipping displaces around 10 billion tons of ballast water each year. Ballast is absolutely essential to the safe and efficient operation of ships, providing balance and stability when empty of cargo. However, the exchange of ballast water is a possible route for the introduction of invasive species. While the International Convention for the Control and Management of Ships' Ballast Water and Sediments of the International Maritime Organization will soon enter into force and is intended to control and manage this problem, its implementation will be influenced by more widespread ratification. The unintentional introduction of invasive alien species can also be caused by activities such as aquaculture, ocean research, tourism and sport fishing.

13. Human activities in the oceans are responsible for increasing levels of underwater noise, and there is growing concern regarding the potential threat to marine living resources posed by noise proliferation. Sources of anthropogenic ocean noise include commercial and non-commercial shipping, air guns used to carry out seismic surveys, military sonar, underwater detonations and construction, resource extraction and fishing activities. Suggested actions include conducting research to address knowledge gaps; mitigating and managing anthropogenic underwater noise; and addressing noise pollution at the source, through improved ship design, which could also potentially yield efficiency gains. At its twelfth meeting in 2014, the Conference of the Parties to the Convention on Biodiversity, in its decision XII/23, encouraged Parties and other Governments, as well as indigenous and local communities and other relevant stakeholders, to take specific measures to avoid, minimize and mitigate the potential significant adverse impacts of anthropogenic underwater noise on marine and coastal biodiversity.[10] In its resolution 71/257, on oceans and the law of the sea, the General Assembly noted, inter alia, that ocean noise could have significant adverse impacts on living marine resources and affirmed the importance of sound scientific studies in addressing the matter. It also decided that the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea would focus its discussions in 2018 on the theme "anthropogenic ocean noise".

14. Pollution from oil has been the most significant type of marine pollution from ships. Despite an increase in the quantity carried and the length of voyages, the number of spills exceeding 7 tons has decreased steadily, from over 100 spills in 1974 to under five in 2012.[11] The total quantity of oil released in those spills has been reduced by an even greater factor. Progress has also been made in improving response capabilities, although much remains to be done, especially as coastal States have to bear the capital cost of acquiring the necessary equipment. In the wake of a number of severe incidents related to offshore platforms in recent years, international attention has also focused on the need to prevent pollution of the marine environment from offshore oil and gas exploration and development. The International Seabed Authority has been developing rules, regulations and procedures concerning the prospecting, exploration and exploitation of marine minerals in the area, which, inter alia, are aimed at ensuring an environmentally sustainable development of seabed mineral resources therein.

15. The dumping of waste at sea was the first activity capable of causing marine pollution to have been brought under global regulation. The Convention on the

[10] See United Nations Environment Programme, document UNEP/CBD/COP/12/29, annex, decision XII/23.

[11] *The First Global Integrated Marine Assessment*; A/71/74.

Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention), adopted in 1972, regulates the dumping of wastes and other matter at sea from ships, aircraft and man-made structures. Controls under that agreement have been progressively strengthened, in particular in the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the London Protocol). As stated in the concept paper for partnership dialogue 7, limited participation has had an impact on the effectiveness of a number of international legal instruments, including the Convention.[12] In addition, over half of the States party to the London Convention and the Protocol thereto do not submit reports on dumping under their control.[13] The London Protocol was amended in October 2013 to regulate ocean fertilization activities and potentially other future marine geoengineering activities within its scope. A working group has been established under the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection to better understand the potential environmental and socioeconomic impacts of different marine geoengineering approaches on the marine environment and to provide advice to the States parties to the London Protocol on marine geoengineering activities.[14]

16. The discharge of garbage from ships is a major part of the problem of marine debris. Steps are being taken to improve the implementation of new controls under the International Convention for the Prevention of Pollution from Ships. For example, the World Bank has helped several Caribbean States to set up port waste reception facilities, which has made it possible for the Wider Caribbean Region to be declared a special area under annex V of the Convention, under which stricter requirements apply. Other States (for example, the Member States of the European Union) have introduced requirements for the delivery of waste ashore before a ship leaves port and have removed economic incentives to avoid doing so. It is, however, too early to judge how such developments have succeeded in reducing the problem as the major obstacle to the implementation of the Convention has been the lack of, or insufficient, reception facilities in many ports worldwide. Compliance with the discharge requirements of the Convention depends heavily on the availability of adequate port reception facilities, especially within special areas established under annex V. In addition, regulations introduced under the Convention are designed to limit air pollution from ships, in particular from sulphur oxide and nitrous oxide emissions and from particulates. There is also scope extension to extend emission control areas, which are areas in which stricter controls are established to minimize emissions.

17. Some of the regional seas programmes (e.g., the Convention for the Protection of the Marine Environment of the North-East Atlantic and the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region) have developed action plans that include monitoring and management of marine debris and other forms of pollution that stem from shipping and fisheries activities. Systems that are used to prevent sea life, such as algae and molluscs, from attaching to the hull and thereby slowing vessels can adversely affect marine biodiversity. A new international agreement addresses the use of chemicals in such systems.

18. There is a broad legal framework for the protection and preservation of the marine environment from all forms of marine pollution centred around the United Nations Convention on the Law of the Sea, which is complemented by a broad

[12] See concept paper on enhancing the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea.

[13] *The First Global Integrated Marine Assessment*, p. 29.

[14] See the concept paper on minimizing and addressing ocean acidification.

range of binding and non-binding instruments related to specific types or sources of pollution.[15] Pursuant to this framework, States have a general obligation to take, individually or jointly, as appropriate, all measures consistent with the Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for that purpose the best practicable means at their disposal and in accordance with their capabilities, and shall endeavour to harmonize their policies in this connection. States also have a broad range of specific legal obligations, contained in Part XII of the Convention and numerous other instruments to which they may be parties, to address marine pollution. Indeed, the Convention provides for internationally accepted rules, standards and recommended practices and procedures to be applied as minimum standards in the formulation and enforcement of national laws, regulations and measures aimed at addressing pollution from seabed activities, dumping and vessels. Such internationally accepted rules and standards must also be taken into account in the development of laws and regulations relating to pollution from land-based activities and pollution coming from, or transiting through, the atmosphere. However, there remain important gaps in and challenges to implementation at the regional, national and global levels that need to be addressed.

III. Challenges and opportunities

19. In its resolution 71/257, the General Assembly has identified a number of challenges, and actions that could be taken to address them, in relation to the protection and preservation of the marine environment. Such actions include increasing participation in global and regional instruments that address the protection and preservation of the marine environment; further developing and implementing, as appropriate and consistent with international law, including the United Nations Convention on the Law of the Sea, of the environmental impact assessment processes covering planned activities under their jurisdiction or control that may cause substantial pollution of or significant and harmful changes to the marine environment; jointly developing and promoting contingency plans for responding to pollution incidents and others that are likely to have significant adverse effects on the marine environment and biodiversity; integrating the issue of marine debris into national and, as appropriate, regional strategies dealing with waste management, including recycling, reuse, reduction and disposal, especially in the coastal zone, ports and maritime industries; addressing consumption and production patterns, including through awareness-raising campaigns; and improving flag State implementation and port State control measures. The General Assembly also reaffirmed the importance of applying an ecosystems approach to oceans.

20. Wastewater and nutrient load pollution is still a major threat to the ocean. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities is intended to deal with land-based impacts on the marine environment, specifically those resulting from sewage, persistent organic pollutants, radioactive substances, heavy metals, oils (hydrocarbons), nutrients, sediment mobilization, litter and physical alteration and destruction of habitat. Under the Global Programme of Action framework almost 100 countries have prepared national programmes of action and/or relevant national plans/strategies to address land-based pollution. The Convention on Biodiversity programme of work on marine and coastal biodiversity promotes steps for the effective application of the Global Programme of Action and other appropriate instruments, including proper coastal land use, watershed planning and the integration of marine and coastal zone

[15] See also concept paper on enhancing the conservation and sustainable use of oceans.

management into key sectors. Although much has been done to implement national programmes of action adopted under the Programme, particularly in South America, the lack of sewage systems and wastewater treatment plants is still a major threat to the ocean. This is particularly true in very large urban settlements.

21. New wastewater treatment technologies and processes developed may have the ability to minimize problems, but there can be gaps in the capacity to apply these newer processes, often because of the costs involved. This is particularly true in developing countries. Information is lacking on the fate of heavy metals and other hazardous substances that are sometimes mixed in with wastewater discharges. There are gaps in educating farmers and industry and other stakeholders on more sustainable practices that reduce the discharge of waste and nutrients to the environment. In many parts of the world, there is no form of regular, systematic assessment of the impact of land-based inputs. Where assessments do occur, they tend to take place once and not in forms suitable for incorporation into wider, continuous assessments. Many of the regional seas programmes have adopted protocols for land-based sources of pollution and related action plans; however, the level of implementation of those protocols is not widely known in many regions.

22. Data and knowledge gaps exist with regard to all aspects of the life cycle of marine debris, plastics and microplastics. There is also a gap in information for evaluating the impacts of marine debris on coastal and marine species, habitats, economic well-being, human health and safety, and social values. Research and development is also required to encourage the reuse and recycling of plastics and create commercially viable options for converting plastic waste into other materials or energy. Marine debris is not only an environmental issue but also a socioeconomic one. Preventive awareness-raising and incentives for changing individual behaviour and industry practices are suggested as an essential first step.

23. With regard to impacts of pollution on marine and coastal biodiversity, in 2010 the Conference of the Parties to the Convention on Biological Diversity adopted Aichi Biodiversity Target 8, which calls for pollution, including from excess nutrients, to be brought down to levels that are not detrimental to ecosystem function and biodiversity by 2020. Efforts have been taken under the Convention to assist States Parties and relevant organizations in achieving that target. In addition, voluntary practical guidance on means of preventing and mitigating the impacts of marine debris on marine and coastal biodiversity and habitats has been developed under the Convention.[16]

24. With regard to pollution from ships, inadequate port reception facilities are a particularly acute problem, especially for small island developing States. Such ports are frequently visited by cruise ships that have a larger capacity than their facilities can handle. Where adequate port waste reception facilities exist, the effective use of those facilities has sometimes been hampered by high costs, complicated procedures, delays in ports, unnecessary paperwork, excessively stringent sanitary and customs regulations and other factors.[17] In certain regions, there is a need to address the risks posed by wrecks and explosive ordnances from war relics, with due regard to cultural heritage and touristic value.

25. There are clear links between management of the oceans and food security, health, employment and cities. The lack of adequate sewage treatment in many large coastal conurbations, in particular in developing countries, and other excessive inputs of nutrients, especially nitrogen, are producing direct adverse impacts on

[16] UNEP/CBD/COP/10/27, annex, decision XIII/10. See also the concept paper on managing, protecting, conserving and restoring marine and coastal ecosystems (A/CONF.230/5).

[17] A/71/74, para. 62.

human health through the proliferation of microbial diseases and eutrophication problems. In many cases, those excessive nutrient inputs are creating harmful algal blooms, which disrupt ecosystems and damage fisheries, especially small-scale fisheries and the related livelihoods. In some cases, people have been poisoned as a result of algal toxins.[18]

26. Population density in coastal zones is significantly higher than in non-coastal areas, and the trend toward urbanization combined with an increasing world population will accelerate the ongoing population migration to coastal areas. That trend has already had a significant environmental impact on seas and oceans, caused in part by the lack of environmentally sound waste management in coastal cities. Similar problems are hardly inevitable in new coastal urban areas; in fact, the economies of scale and critical mass that cities generally provide are a basic prerequisite for most waste management infrastructure. When cities plan in advance and are supported by adequate legislation and financing, they are able to provide much better waste management than non-urban coastal areas. Support for integrated watershed and coastal zone management, especially in small island developing States, is needed.

27. The issue of pollution has direct linkages to several of the other areas covered in the Sustainable Development Goals, including management of freshwater resources, as rivers act as a conduit for pollutants into the marine environment. Sustainable consumption and production is highly relevant to the incorporation of circular economy principles and practices that touch on higher resource use efficiency, recycling and minimization of harmful discharges into the environment.

28. The increase in the accidental introduction of alien species, both from shipping through ballast water and from escaped farmed species, has implications for food security and human health. In favourable conditions, alien species may become invasive and outcompete local marine species and result in biodiversity loss, thereby impacting local marine ecology, complex food webs, food security and human health.

29. The General Assembly has recognized the importance of capacity-building for developing States, in particular the least developed countries, landlocked developing countries and small island developing States, as well as coastal African States, for the protection of the marine environment and the conservation and sustainable use of marine resources. It also recognized the need to build the capacity of developing States to raise awareness and support the implementation of improved waste management practices, noting the particular vulnerability of small island developing States to the impact of marine pollution of all kinds, in particular from land-based activities and marine debris and nutrient pollution.

30. Cross-sectoral and inter-agency cooperation and coordination at the global, regional and national levels is critical to addressing all forms of pollution, in particular from land-based sources. Strengthening such cooperation and coordination can facilitate the consideration of all costs and impacts of activities, including in relation to pollution of the marine environment. In that regard, the mainstreaming of considerations regarding the protection and preservation of the marine environment into national development programmes and strategies could be beneficial.

[18] *The First Global Integrated Marine Assessment*, p. 37.

IV. Existing partnerships

31. There are a range of partnerships addressing marine pollution. A well-established example is the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, which was adopted in 1995. Since 2012, the programme has focused on marine pollution in relation to three source categories: nutrient management, marine litter and wastewater. All three partnerships (the Global Partnership on Nutrient Management, the Global Partnership on Marine Litter and the Global Wastewater Initiative) have advisory capacity and engage in science-policy interface activities. The partnerships under the Global Programme of Action are now all fairly well established with defined governance structures and recognized as providing a forum for the exchange of knowledge and best practices. One key success factor is the composition of the partnerships, which has broad stakeholder representation.

32. The resourcing of implementation actions has been identified as a gap, as has the building of national capacity for effective waste management. A challenge facing enhanced cooperation remains the predominance of the sectoral approach. Although this is understandable, in that a sectoral approach is based on thematic expertise of each organization, there has been a shift towards a holistic vision in recent years, as reflected in Sustainable Development Goal 14. In relation to the Global Programme of Action, it has been noted that there has been limited translation of the work of the partnerships into influential areas of government policy. There is some transfer of knowledge and best practices in both technical and policy arenas, but it could be substantially strengthened. This is partly due to the fact that there is insufficient representation by governmental entities in the partnerships. Resource and capacity limitations within the Global Programme of Action have limited the ability to fully support the partnerships at the national level. The private sector has seen limited engagement in the use of the partnerships for transmitting knowledge and incorporating best practices.

33. The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection aims to provide authoritative, independent, interdisciplinary scientific advice to the United Nations system and other organizations to support the protection and sustainable use of the marine environment. At present, United Nations organizations with responsibilities relating to the marine environment include the Food and Agriculture Organization; the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization; the International Atomic Energy Agency; the International Maritime Organization; the United Nations Development Programme; UNEP; the United Nations Industrial Development Organization; the United Nations Secretariat; and the World Meteorological Organization. Those organizations sponsor activities of the Joint Group of Experts, including a number of working groups that provide advice on marine pollution issues.

34. The Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, is the first global mechanism for reviewing the state of the marine environment, including socioeconomic aspects, on a continual and systematic basis by providing regular assessments at the global and supraregional levels and an integrated view of environmental, economic and social aspects. Such assessments support informed decision-making.[19]

[19] See the concept paper for partnership on increasing scientific knowledge, and developing research capacity and transfer of marine technology (A/CONF.230/9).

35. At the regional level, there are other long-standing partnerships with key international and regional organizations that could be further built on, such as the partnership between UNEP/Mediterranean Action Plan and the European Environment Agency, the International Atomic Energy Agency and the International Maritime Organization, which all have specific objectives in relation to pollution management.

V. Possible areas for new partnerships

36. Areas that have been identified for further research and policy development are emerging pollutants, such as microplastics, endocrine-disrupting compounds and harmful algal blooms. Proposals for new partnerships, drawn from the submissions for the present dialogue, are outlined below:

(a) Raising public awareness on plastic pollution and its negative impacts and demonstrating the social, environmental and economic benefits of recycling are essential. There is scope for public-private partnerships that raise awareness among manufacturers, distributors, consumers and others, in order to promote the development of better alternatives, change consumer behaviour and promote recycling;

(b) Partnerships on improved and quieter ship design that bring together naval architects and designers, shipbuilders, and shipping companies could help to find a long-term way to address noise pollution from shipping;

(c) There is scope for partnerships to improve the sustainability of ports on a number of fronts, for instance, relating to waste management and reception facilities;

(d) Partnerships for the sound management of chemicals, including capacity development for the development of national legislation and management systems;

(e) Partnerships that promote sustainable marine transport in relation to reducing shipping emissions and new regional recycling and waste collection centres;

(f) A proposed new partnership between UNEP and the Secretariat of the Pacific Regional Environment Programme to cooperate in the delivery of the Global Partnership on Marine Litter in the Pacific in order to implement the Cleaner Pacific 2025: Pacific Regional Waste and Pollution Management Strategy 2016-2025;

(g) Engage additional sectoral interests, for instance, private sector entities with regional or global reach, in the Global Programme of Action partnerships;

(h) New partnerships operating at the land-sea interface could contribute to assessing and mitigating the entry of microplastics into the marine environment, possibly building on the Initiative on Water Quality of the United Nations Educational, Scientific and Cultural Organization;

(i) Building on existing partnerships should be further encouraged and strengthened, such as the Regional Cooperation Platform on Marine Litter in the Mediterranean, established between intergovernmental organizations, national authorities and targeted stakeholders, including the business community;

(j) Attention could also be given to strengthening the implementation of the legal regime for the protection and preservation of the marine environment. That could be achieved through activities and partnerships that provide training and technical assistance on the development of national legislation and policy and

develop the scientific and technical capacity to monitor, assess and address marine pollution.

VI. Guiding questions for the dialogue

37. The following questions could be considered in the dialogue:

(a) How can linkages between collective arrangements at the regional and global levels be improved?

(b) What can be done to strengthen waste management practices with the aim of reducing marine debris and pollution? What sustainable financial mechanisms can be utilized for the development and maintenance of sound waste management practices and infrastructure?

(c) What are the key sectors that have the potential to make major contributions to controlling ocean pollution? What steps can be taken to deepen the engagement in existing and new partnerships?

(d) How can partnerships promote compliance with existing agreements (for example, the United Nations Convention on the Law of the Sea and the International Convention for the Prevention of Pollution from Ships)?

United Nations A/CONF.230/5

General Assembly

Distr.: General
1 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 9 of the provisional agenda*
Partnership dialogues

Managing, protecting, conserving and restoring marine and coastal ecosystems

Concept paper prepared by the secretariat

I. Introduction

1. The present concept paper for the partnership dialogue on the theme "Managing, protecting, conserving and restoring marine and coastal ecosystems", prepared pursuant to General Assembly resolution 70/303, relates to targets 14.2 and 14.5 of the Sustainable Development Goals. The paper is based on inputs received from Member States, intergovernmental organizations, the United Nations system and other stakeholders.[1]

2. Marine and coastal ecosystems, which include natural assets such as marine living resources and a range of important habitats and features such as mangroves, coral reefs, seagrass beds, coastal tidal marshes, seamounts, thermal vents and cold water corals, are crucial for human well-being and sustainable development. They provide humans with food, water, medicines, construction materials, energy, transport, shoreline stabilization, coastline protection and erosion prevention, climate regulation, oxygen production and the maintenance of biodiversity, as well as recreation, aesthetic, cultural, religious and spiritual services. Marine and coastal ecosystems act as carbon sinks absorbing annually about one fourth of the total annual anthropogenic emissions of carbon dioxide.[2] They provide a vital basis for the livelihoods of many coastal communities, particularly resource-dependent

* A/CONF.230/1.

[1] Given the word limit, not all inputs have been included in their entirety, but they can be accessed at https://oceanconference.un.org/documents.

[2] United Nations, Division for Ocean Affairs and the Law of the Sea, *The First Global Integrated Marine Assessment: World Ocean Assessment I* (Cambridge, Cambridge University Press, 2017).

17-06987 (E) 240517

Please recycle

communities in developing countries. The ecosystem services marine and coastal ecosystems provide have a substantial economic value, estimated by studies to be on the order of trillions of United States dollars annually.[3]

II. Status and trends

3. Marine and coastal ecosystems are increasingly threatened, degraded and destroyed by marine- and land-based human activities. Major adverse impacts to ecosystems stem from climate change,[4] unsustainable extraction of marine resources,[5] physical alteration and destruction of marine and coastal habitats and landscapes, and marine pollution,[6] which act cumulatively. These impacts are expected to increase if no countermeasures are taken, especially given the projected global population growth to 9.7 billion people by 2050.[7] It is estimated that already, today, about 30 per cent of fish stocks are being fished at a biologically unsustainable level and therefore overfished.[8] The exploitation of marine mammals, together with the fact that they accidentally get entangled or entrapped in fishing gear or are being struck by vessels, has caused certain species of marine mammals to become extinct over the past few centuries. In addition, many populations have been reduced to remnant status such that they no longer play a significant role in the ecosystem. Major marine ecosystems have already been degraded or are being used unsustainably. Between 20 and 35 per cent of mangroves have been lost since 1980. Coral reefs around the world have been in a state of continual decline over the past 100 years, especially over the past 50 years. Studies estimate that approximately 19 per cent of the world's coral reefs are severely damaged with no immediate prospects of recovery, more than 60 per cent are under immediate threat, and all coral reefs could face functional extinction by 2050. It has been predicted under some climate change scenarios that up to 60 per cent of the current biomass in the ocean could be affected, either positively or negatively, resulting in disruptions to many existing ecosystem services.[9] Some of the consequences for humans are the increased vulnerability of local communities to extreme weather events due to undermined natural protection barriers and damage or destruction of human settlements and infrastructure; the displacement of local communities, for example due to reduced fishing opportunities; increased food insecurity and decreased availability of freshwater; and reduced sources of livelihood and employment.

4. As marine and coastal ecosystems provide important economic, sociocultural and environmental benefits, their sustainable management, protection, conservation and restoration are crucial. Restoring and protecting the health of oceans and coasts also contributes to strengthening the resilience of both natural and human systems to climate change and their capacity to adapt to other threats.

5. Because individual stressors interact, managing each activity that impacts marine ecosystems in isolation would be insufficient for achieving ocean health and resilience. The cumulative impacts need to be taken into account.

---

[3] Ibid.

[4] See also the concept paper on minimizing and addressing ocean acidification.

[5] See also the concept paper on making fisheries sustainable.

[6] See also the concept paper on addressing marine pollution.

[7] See Department of Economic and Social Affairs, *World Population Prospects: The 2015 Revision — Key Findings and Advance Tables* (ESA/P/WP.241).

[8] Food and Agriculture Organization, *The State of World Fisheries and Aquaculture 2016: Contributing to Food Security and Nutrition for All* (Rome, 2016).

[9] *The First Global Integrated Marine Assessment*.

6. The United Nations Convention on the Law of the Sea provides the legal framework within which all activities in the oceans and seas must be carried out, including for the conservation and sustainable management of marine living resources, marine biological diversity and the protection and the preservation of the marine environment.

7. Several efforts are undertaken to identify and describe marine areas in need of conservation, while the criteria for such identification differ. One example is the global process to facilitate the description of ecologically or biologically significant marine areas through regional workshops under the Convention on Biological Diversity. Thus far, these regional workshops have covered more than 70 per cent of the ocean and described more than 200 areas meeting the scientific criteria for ecologically or biologically significant marine areas. Other efforts undertaken include those by the Food and Agriculture Organization of the United Nations for the identification of vulnerable marine ecosystems and those by the International Maritime Organization to identify particularly sensitive sea areas. Possible overlaps and synergies between these various efforts could be further investigated.

8. Diverse area-based measures and management tools can be used to sustainably manage, protect, conserve and restore marine ecosystems, including, for example, the application of ecosystem approaches, marine spatial planning, integrated coastal zone management and the establishment of marine protected areas, consistent with international law and based on the best available scientific information, including representative networks. The main purpose of these measures is to sustainably manage, protect, conserve and restore coastal and marine areas and resources, including underwater cultural heritage, while also supporting economically valuable activities and having important social impacts.

9. Area-based measures are being integrated in national development plans and strategies and are referred to in various instruments at the global, regional and national levels.[10] Many initiatives employ a suite of management tools in an integrated, cross-sectoral manner, including area-based management tools, environmental impact assessments, management of land-sea interactions, watershed and catchment planning and management, resource management, gear restrictions and the promotion of cleaner production and environmentally sound technologies, as well as pollution prevention and control.

10. Apart from having noted the need to apply a precautionary approach in the management of activities that have an impact on the marine environment, States have long recognized the importance of ecosystem approaches as the basis for the sustainable management of the marine environment and resources. While there is no single ecosystem approach, the main common feature is to address all human activities that impact the functioning of ecosystems in order to maintain and, where needed, restore ecosystem health in order to sustain goods and environmental services, provide social and economic benefits for food security and sustain livelihoods. At the national level, some States apply the ecosystem-based management approach to fisheries. At the regional level, the regional seas conventions and action plans, regional fisheries bodies and large marine ecosystem projects are also advancing ecosystem approaches from their different perspectives. Ecosystem approaches have the potential to support a variety of other management tools, including marine spatial planning, to provide a framework for cross-sectoral cooperation and coordination of national and international measures. Current national, regional and global efforts for and the management of marine resources

[10] See also the concept paper on enhancing the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea.

and ecosystem services, to a large extent, already integrate and/or strive to implement ecosystem approaches.

11. At the national and regional levels, integrated coastal zone management evolved from the practical need to plan and manage the various economic activities that occur in the coastal areas, regulate human behaviour, coordinate policy and management interventions, and integrate the use of coastal waters into land-use planning. Integrated coastal zone management is considered to be one of the tools to apply an ecosystem approach to coastal areas.

12. Marine spatial planning, another important tool to apply ecosystem approaches, involves a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas in order to achieve ecological, economic and social objectives that have been specified through political processes. Over the past 10 years, marine spatial planning has matured from a concept to being a practical approach, and integrated marine spatial plans are now being implemented in about 20 countries. Marine spatial planning is expected to become an increasingly important tool in countries and regions.

13. Marine protected areas (MPAs) have become a mainstream tool for conserving marine biodiversity and are advanced through several global and regional instruments, including the Convention on Biological Diversity, the outcome document of the United Nations Conference on Sustainable Development, entitled "The future we want", and several regional seas conventions and action plans, as well as regional fisheries management conventions. MPAs can accomplish a broad range of objectives, including habitat and species protection, fisheries outcomes, the securing of livelihoods and food security, sustainable uses, cultural objectives, public education and outreach, and the application of the precautionary and ecosystem approaches. MPAs have also had a role in revitalizing management by communities of their adjacent marine resources. MPAs can represent an effective tool to mitigate and adapt to climate change impacts and to increase the resilience of social and ecological ecosystems. MPAs can prohibit all activities in an area, prohibit certain activities or restrict certain activities within an area through, for example, time/area closures, gear restrictions, fishing quotas, specific licenses and permits. In addition to government-established MPAs, which are often under government management, either fully or partly, indigenous and local community conserved areas and private protected areas also form an important part of the overall conservation effort. There are now 14,688 MPAs covering almost 15 million square kilometres, or 4.12 per cent of the oceans, up from 3.4 per cent in 2014. Only 1 per cent is protected in no-take marine reserves, which offer a higher degree of protection and have more benefits.[11] While MPA coverage has grown significantly over the past decade, the geographical distribution of MPAs is very uneven, with a small number of countries making up most of the area covered by MPAs. A sizeable fraction of MPAs are in the waters of Australia, the United States of America and Europe, including overseas territories. A significant increase in the rate of creation of such areas is needed in Africa, Latin America and the Caribbean, South and East Asia and small island States, where coastal economies, livelihoods and food security are more dependent upon healthy, functioning marine ecosystems. Polar regions are also underrepresented. There is a trend towards larger MPAs in the light of scientific studies demonstrating the conservation benefits of establishing larger-scale MPAs.

[11] United Nations Environment Programme World Conservation Monitoring Centre and International Union for Conservation of Nature, *Protected Planet Report 2016: How Protected Areas Contribute to Achieving Global Targets For Biodiversity* (Cambridge, United Kingdom, 2016).

14. Activities are also taking place for the conservation of underwater cultural heritage and marine areas of outstanding universal value. The United Nations Educational, Scientific and Cultural Organization's World Heritage List currently includes 49 ocean places, distributed across 37 countries, recognized for their unique marine biodiversity, singular ecosystem, unique geological processes or incomparable beauty. World Heritage marine sites cover about 10 per cent of the surface area of all existing MPAs.[12]

15. In recent years, the international community has become increasingly aware of the range of services provided by marine ecosystems and of the rich biodiversity of pelagic and benthic ecosystems beyond the limits of national jurisdiction, namely in the high seas and the Area. Area-based management tools, including MPAs, and environmental impact assessments are some of the issues considered in a package of issues by the preparatory committee established by the General Assembly in its resolution 69/292, entitled "Development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction".

16. Many United Nations organizations have ongoing activities in support of managing, protecting, conserving and restoring coastal and marine ecosystems. These include practical area-based and science-based management tools; policy guidance and capacity-building to support implementation of ecosystem-based management and governance; developing Member States' capacities for the integration of climate change adaptation and coastal hazards preparedness; outlook systems for specific weather-climate phenomena, such as El Niño, which can affect ecosystems on a global scale; developing guidelines, training materials and tools; identifying species biodiversity on the national, regional and global scales; creating a database repository of relevant management measures to protect vulnerable species and ecosystems; examining the impacts of climate change and the effects of marine pollution on ecosystems; and developing environmental regulations to manage the effect of deep seabed mining and many other activities.

17. Efforts are also being made for strengthening the effectiveness of MPAs and the equitable sharing of MPA costs and benefits among relevant stakeholders; the establishment of regional networks and information-sharing portals for capacity-building and sharing experiences; offering training courses on area-based management tools; continuous tracking of progress made with regard to the conservation of coastal and marine areas, including global MPA coverage; implementation of various programmes, including on fostering cooperation for sustainable use of marine ecosystems, preventing the loss and degradation of coastal habitats; fostering sustainable fisheries; preventing, controlling and managing alien invasive species; enhancing the science-policy interface; managing the human-biodiversity interface; and integrating biodiversity and ecosystem services into development and finance planning. Finally, there have been significant efforts aimed at facilitating progress towards the Aichi Biodiversity Targets in marine and coastal areas, which overlap and align very closely with some of the targets under Goal 14 and other Sustainable Development Goals.[13]

[12] United Nations Educational, Scientific and Cultural Organization, *The Future of the World Heritage Convention for Marine Conservation: Celebrating 10 Years of the World Heritage Marine Programme* (Paris, 2016).

[13] For example, Aichi Biodiversity Targets 10, 11, 12, 14 and 15.

III. Challenges and opportunities

18. One of the major challenges to the sustainable use of marine biodiversity is that biodiversity hotspots tend to attract human uses and become socioeconomic hotspots. Hence biodiversity-rich areas often have a disproportionately large amount of ports and coastal infrastructure and intensive coastal land uses, including fishing and other activities. The 66 large marine ecosystems of the world, for example, are the most productive regions, and the greatest pressures are exerted upon them. The ecologically defined boundaries of large marine ecosystems generally transcend legal boundaries and encompass the maritime zones of two or more countries, thereby fostering international cooperation among countries but also posing a major governance challenge.

19. While integrated coastal zone management and MPAs are commonly applied, and despite local success stories, biodiversity in coastal areas continues to decline, with intensifying pressures. The successful implementation of integrated coastal zone management remains a challenge. Some reasons cited for this include competing jurisdictions and decision-making, conflict between different activities and users, and inadequate governance.

20. In addition, many areas that are protected or are planned to be protected through area-based management tools are located in areas removed from where commercial activities occur or may not adequately protect the species, communities and habitats most threatened. MPAs can also fail to reach their full potential as a consequence of factors such as illegal harvesting, regulations that legally allow detrimental harvesting, or the movement of animals outside MPA boundaries because of continuous habitat or the inadequate size of the MPA. The effective management of MPAs remains one of the largest problems. In addition, there is not yet an agreed or standardized methodology to track progress on the equitable management of MPAs. Often, MPAs are not integrated into broader governance and management frameworks, and the limited connectivity among MPAs does not benefit ecosystem processes, functions and productivity. The socioeconomic costs and benefits created by MPAs need to be further investigated, and the need for more equitable sharing of social and economic benefits derived from MPAs could be addressed.[14]

21. The development and implementation of area-based management tools could, to the extent possible, be combined with other appropriate conservation and management measures, taking into account socioeconomic aspects and the need to avoid negative impacts in other areas. Studies are needed to determine under what circumstances an MPA is the appropriate tool and when other management measures are needed, or a combination of management tools.

22. There is an opportunity to increase the integration of area-based measures into national strategies related to sustainable development. In this context, there is a need for improvement and better use of appropriate planning tools and approaches for mainstreaming ecosystem approaches into national strategies. Another opportunity is to consider the challenges of climate change in area-based management plans and their monitoring activities. Disaster risk reduction and management could be an integral element of integrated coastal area management. Long-term sustainable observation networks and reliable predictive tools constitute essential elements of early warning systems which aim to protect coastal regions and people living there.

[14] See also the concept paper on increasing economic benefits to small islands developing States and least developed countries and providing access for small-scale artisanal fishers to marine resources and markets.

23. It is paramount that all sectors, whether marine-based or land-based, work together to consider and address the various impacts that different human activities have on the functioning of ecosystems while considering the range of benefits, goods and services that the different uses of coastal and marine ecosystems can bring. Further application of area-based management measures can enhance cross-sectoral cooperation and create synergies in achieving targets under Goal 14 and other Sustainable Development Goals. Sharing knowledge and practices more systematically can help address coordination challenges. Cooperation can also be facilitated and stimulated by global-level dialogue and experience-sharing across regions. A good example is the cooperation between some regional seas organizations and regional fisheries management organizations/arrangements, which has proved to be useful in advancing ecosystem approaches.

24. Effective enforcement measures, including traditional and community-based measures, as well as new technologies such as satellites, need to be in place to backstop area-based management tools. Enforcement could be improved by reaching national and local agreements with related institutions and stakeholders, complementing roles and sharing expertise and capacities. Institutional arrangements that ensure and enhance surveillance, monitoring and effective control and enforcement need to be established.

Stakeholder involvement

25. Stakeholders, especially local communities, are often not sufficiently involved in the development, designation and management of area-based measures in a transparent, just and equitable manner, although there is recognition of the need to take into account traditional and indigenous knowledge. Often, there is a lack of sustainable alternative livelihoods or financial incentives when customary resources become unavailable to local populations due to the implementation of area-based management measures. Tools are lacking for the equitable sharing of social and economic benefits derived from area-based management measures.

26. Area-based management tools should balance economic development, social needs and environmental protection while also taking cultural aspects into account. Sustainable management of marine and coastal ecosystems requires the involvement of both public and private stakeholders and the sustained buy-in of coastal communities. The short-term costs and how these measures impact local communities and other stakeholders should be understood and considered. Meaningful alternative livelihoods must be made available to local communities, which should be an integral part of national development agendas. Clear legislative and policy frameworks must be in place to foster community organization and to allow for their full participation in the management of marine resources as stewards.

27. It is very important to apply a gender perspective to the sustainable use and management of marine and coastal resources in recognition of the very often significant role played by women in small-scale fisheries[15] and aquaculture and, overall, in the value chain from catch and harvesting to consumption and marketing.

Governance

28. Generally speaking, governance for the sustainable management, protection, conservation and restoration of marine ecosystems is showing weaknesses at all levels. There is often a gap in setting up cross-sectoral cooperation and management through area-based management measures. In particular, lack of coordination between the fisheries and aquaculture sectors and biodiversity and conservation

[15] Ibid.

sectors has been an issue. This can be compounded by ineffective governance in relevant sectors, including inadequate alignment of policies and legislation, poor enforcement, weak institutions and insufficient participation of civil society. There are often insufficient institutional capacities and inter-institutional collaboration (across sectors and between government agencies) in relation to different area-based measures leading to knowledge and data gaps, poor information-sharing and redundancy in management efforts. In addition, there is often a lack of strong and coordinated public bodies to develop coastal and marine integrated management and planning, and there is a need for effective national legislation, administrative and technical frameworks and adequate technological, financial and human capabilities.

29. Opportunities exist for strengthening governance at all levels. Governance needs to incorporate the simultaneous consideration of several uses or sectors and the livelihoods and other social aspects connected with these activities. This encompasses, inter alia, the prevention and management of waste, in particular wastewater, created by various land-based activities, including agriculture and industry; addressing the impacts created by land-use change and urbanization; the sustainable management of fisheries;[16] managing competing interests and uses of coastal ecosystems; and generally all the facets of managing coastal and marine ecosystems.

30. Governance could be improved through increased transparency, accountability, participation, coordination, legitimacy and adaptability, while fairness or equity could be increased by creating means to share the benefits of conservation locally, particularly by supporting local economic and tourism development,[17] capacity-building programmes and hiring practices.

31. Agreements between different national ministries and institutions should be established to promote synergies and/or clarify shared responsibilities. There is a need to integrate policies, build institutional bridges and clarify governance frameworks with respect to sector-specific policies and policies relevant to area-based measures at the national level. Implementing policies across sectors and managing trade-offs will deliver shared benefits and develop cost-effective pathways towards sustainably managing, protecting, conserving and restoring marine and coastal ecosystems. It will also help to identify co-funding opportunities from a wide range of sources.

Knowledge and data

32. Managing ecosystems sustainably involves balancing sustainable use and biodiversity conservation; yet, often there seems to be no clear process for addressing the different knowledge gaps and ensuring that sound advice is available for management.[18] There is a need for a better understanding of ecosystem processes and functions and their implications for ecosystem conservation and restoration, ecological limits, tipping points, socioecological resilience and ecosystem services. There is also a gap in terms of understanding species and biodiversity of marine resources. The limited amount of scientific knowledge about areas beyond national jurisdiction means that the extent of impacts on and the productivity limits and recovery time of ecosystems and biodiversity in those areas cannot be predicted. Many aspects of integrated coastal zone management still have important

[16] See also concept paper on making fisheries sustainable.

[17] See also concept paper increasing economic benefits to small islands developing States and least developed countries and providing access for small-scale artisanal fishers to marine resources and markets.

[18] See also concept paper for partnership on increasing scientific knowledge, and developing research capacity and transfer of marine technology.

knowledge gaps. There is little scientific understanding of the efficacy of area-based measures implemented, in particular with regard to their socioeconomic benefits. The acquisition of sufficient credible scientific data and information and the high cost of conducting marine scientific research pose important challenges, in particular for developing countries.

33. Assessments[19] and research on marine and coastal ecosystems and the ecosystem services they provide should be maintained and expanded, including with regard to socioeconomic aspects and possible future impacts on ecosystems and their resilience to them. The importance of measuring changes to marine ecosystems has been recognized to be crucial to inform future management policies. By appropriately valuing natural assets in particular, all activities that exploit them, whether directly and indirectly, could contribute to their sustenance. Data collection, access and sharing should be supported, including through observation networks and inventories. The use of traditional and ecological knowledge from local communities should be enhanced as relevant indigenous and traditional knowledge systems and the collective actions of indigenous and local communities can complement scientific knowledge in support of effective implementation. Clear and measurable objectives are required to evaluate the effectiveness and impact of area-based measures, including how land-based human activities impact their effectiveness, and area-based measures should be subject to periodic reviews. Baselines should be established to enable informed and integrated ocean management.

Capacity development

34. Gaps exist at both the national and local levels, especially in developing countries, with regard to technical and management capacities for the scientific identification of areas requiring protection, the development of area-based management plans for them, and the enforcement of regulations that may be required.[20] Enhanced technical and scientific cooperation and significant capacity development are required to support countries and address within country coordination as well as cooperation between countries on significant transboundary issues.

Finance

35. There is a lack of dedicated and sustainable financing for area-based measures at all levels. The application of innovative financial tools for ecosystem management is also a challenge, in relation to the mobilization of national public funding to support integrated policies, as is the lack of commitment and contributions from partners or support institutions.

36. An overall substantial increase in funding is needed. New national and regional trust funds could be developed for MPAs and other area-based measures as well as new and innovative financing mechanisms developed in support of regional networking activities dedicated to strengthening knowledge, capacity and policies at the local and national levels with regard to area-based management. Sufficient resources should be allocated to the monitoring, control and surveillance of area-based management tools. Innovations related to polluter/payer contributions integrating the land-sea link could dedicate funding to restoration and marine conservation actions. Gap analyses can help to produce national strategies for

[19] See, for example, *The First Global Integrated Marine Assessment*.

[20] For more information on capacity development, see also the concept paper on increasing scientific knowledge, and developing research capacity and transfer of marine technology.

sustainable funding directed towards the long-term financing of area-based measures.

IV. Existing partnerships

37. There are a great number of partnerships for coastal and marine ecosystem management, at different levels and involving a range of stakeholders and modalities.[21] They cover virtually all aspects of ecosystem management, including the management of specific threats to specific ecosystems or species; institutional coordination; scientific research and the sharing of data, knowledge and best practices; the creation of new financing tools and strategies; and the implementation of area-based measures, including as tools for climate change mitigation and adaptation. Some partnerships focus on building the capacities of countries to effectively develop and implement area-based measures and integrate them into national strategies.

38. In some countries, especially developing countries, holistic approaches encompassing several areas predominate due to capacity limitations. Given the multitude of partnerships, it will be crucial to strengthen cooperation to enhance effectiveness and avoid duplication. Existing best practices on intragovernmental cooperation could be analysed and shared. Depending on the existence of organizations having shared or similar goals, potential areas could be identified where cooperation could be promoted in a feasible and practical manner. At the regional level, this will also depend on the political will of participating countries to support formal cooperation.

V. Possible areas for new partnerships

39. In order to sustainably manage, protect, conserve and restore marine and coastal ecosystems, more win-win partnerships will have to be established between all relevant stakeholders with regard to area-based measures. Partnerships focused on capacity-building and technical assistance can improve the capacities of local communities to better participate in area-based resource management. They can also strengthen the capacities of public institutions to provide an enabling environment for all marine and coastal activities (e.g., in terms of policy coherence, institutional coordination, collaboration, information, communication and monitoring) and support the integration of area-based measures in national strategies and development plans. Since ocean management is naturally a transboundary endeavour, the scope of new partnerships should focus not only on scientific approaches and tools but also on coordinating and aligning management efforts across all levels (local, national, regional and global).

40. Local communities and authorities must be engaged and empowered so that they can actively participate in the design of the future they want for their coastal areas and seas. All stakeholders should be made aware of the multiple ecosystem services provided by marine and coastal ecosystems. Citizens need to understand the important role they can play and how they can be involved.

41. Other areas for partnerships suggested include, for example, a global partnership on marine spatial planning implementation; partnerships to improve the protection of and research on underwater cultural heritage, as well as responsible public access to it; a dedicated partnership to consolidate a global network of

[21] For information on partnerships, see https://sustainabledevelopment.un.org/sdinaction; and for information on voluntary commitments, see https://oceanconference.un.org/commitments/.

practitioners involved with large marine ecosystems; public-private partnerships to support area-based management tools and their funding; training of key stakeholders on sustainable financing systems for MPAs and on the links between business plans and management performance; a new, interdisciplinary partnership among United Nations agencies, civil society, academia, regional organizations and projects and the private sector, focusing on area-based solutions and synergies to support ocean and coastal governance and management within wider sustainable development processes; a global ocean data and knowledge-sharing mechanism to support implementation of the Sustainable Development Goals; a partnership to better coordinate by-catch initiatives in relation to cetaceans; partnerships that secure sustainable futures for communities and safeguard natural assets; partnerships to improve land-use management and on-the-ground conservation, restoration and sustainable use of mangroves; and partnerships to increase coastal communities' resilience with respect to the impacts of climate change.

VI. Guiding questions for the dialogue

42. The following questions could be considered in the dialogue:

(a) What are the contributing factors for the successful management, protection, conservation and restoration of marine and coasta ecosystems?

(b) What type of partnerships creates engagement across sectors that traditionally function as separate entities, and why are they successful?

(c) How can we ensure local community involvement, alternative livelihood development and the equitable sharing of benefits derived from area-based measures?

(d) How can we better measure the impacts and effectiveness of area-based measures and their socioeconomic costs and benefits?

United Nations A/CONF.230/6

General Assembly

Distr.: General
2 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 9 of the provisional agenda*
Partnership dialogues

Minimizing and addressing ocean acidification

Concept paper prepared by the secretariat

I. Introduction

1. The present concept paper on partnership dialogue 3 on the theme "Minimizing and addressing ocean acidification", prepared in response to General Assembly resolution 70/303, covers target 14.3 of the Sustainable Development Goals. The paper is based on inputs received from Member States, intergovernmental organizations, the United Nations system and other stakeholders.[1]

2. Ocean acidification is a threat to marine organisms, ecosystems, services and resources. It has potentially considerable ecological and socioeconomic consequences, adding to multiple stressors on ocean ecosystems, including other climate-driven changes, such as ocean warming, sea level rise and deoxygenation, and local pressures from pollution, overexploitation and habitat destruction.

3. One fourth of the carbon dioxide released into the atmosphere as a result of anthropogenic activities is absorbed by the ocean.[2] This vital service is not without consequence, however: when carbon dioxide enters the ocean, it changes the seawater chemistry, resulting in increased acidity. That change severely affects biological processes, with potentially profound socioeconomic impacts.

4. The long-term control of ocean acidification depends on a reduction in emissions of carbon dioxide into the atmosphere. In this regard, the ratification and effective implementation of the Paris Agreement will be instrumental. Even if

* A/CONF.230/1.

[1] Given the word limit, not all inputs have been included in their entirety, but they can be accessed at https://oceanconference.un.org/documents.

[2] Corinne Le Quéré and others, "Impact of climate change and variability on the global oceanic sink of CO_2", *Global Biogeochemical Cycles*, vol. 24, No. 4 (December 2010).

Please recycle

carbon dioxide emissions are reduced immediately, there will be lag time before the acidity levels of oceans normalize, in particular since more acidic surface ocean waters mix with deep water over a cycle that lasts hundreds of years. It is therefore critical to build the resilience of ocean ecosystems, and of the people who depend on them for their livelihoods, to the effects of ocean acidification and climate change.

II. Status and trends

5. Since the industrial revolution, some 375 billion tons of carbon have been emitted into the atmosphere by humans as carbon dioxide.[3] Globally averaged surface carbon dioxide reached new highs in 2015 at 400 parts per million, or 144 per cent of pre-industrial (before 1750) levels.[4] The increase in carbon dioxide from 2014 to 2015 was larger than that observed from 2013 to 2014 and that averaged over the past 10 years. The El Niño event in 2015 contributed to the increased growth rate through complex two-way interactions between climate change and the carbon cycle.[4]

6. The main sinks for carbon dioxide emissions emanating from fossil fuel combustion are the oceans and the terrestrial biosphere. Since the beginning of the industrial revolution, oceans have become 27 per cent more acidic,[5] and ocean acidity could increase by 150 per cent by 2050.[6] This would give marine ecosystems a very short amount of time for adaptation, as it would represent a rate of increase that is 100 times faster than that of any change in ocean acidity experienced over the past 20 million years.[6]

7. Ocean acidification affects calcifying organisms, such as corals, because their ability to build shell or skeletal material depends on the acidity of the water. As acidification intensifies, this problem will become more widespread and occur in wild, as well as in cultured, stocks. Ocean acidification also affects other marine biota, including by reducing their survival, development and growth rates. It therefore directly affects important components of the ocean food web, such as primary producers (plankton), coral reefs, shellfish and crustaceans; marine species that are important in capture fisheries and mariculture are also affected. Coral reefs in particular are very sensitive to ocean acidification, with 60 per cent currently threatened, a number that will rise to 90 per cent by 2030 and about 100 per cent by 2050.[7] Socioeconomic impacts include impacts on food security and the livelihoods of the fishing and aquaculture communities. Many such communities are especially vulnerable because they have fewer alternative livelihoods (see A/72/70, paras. 30-31).

8. In addition to acidification, most of the excess heat caused by increases in atmospheric greenhouse gases is absorbed by oceans, causing ocean warming and a loss of oxygen. The deep seabed and overlying waters are particularly vulnerable to the loss of oxygen. The most recent estimate indicates that the volume of water in

[3] World Meteorological Organization, Greenhouse Gas Bulletin No. 8 (November 2012). http://www.wmo.int/pages/prog/arep/gaw/ghg/documents/GHG_Bulletin_No.8_en.pdf.

[4] World Meteorological Organization, Greenhouse Gas Bulletin No. 12 (October 2016).

[5] Ken Caldeira and Michael Wickett, "Oceanography: anthropogenic carbon and ocean pH", *Nature*, vol. 425, No. 6956 (September 2003), p. 365. https://www.nature.com/nature/journal/v425/n6956/.

[6] Secretariat of the Convention on Biological Diversity, *Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity*, Technical Series No. 46 (Montreal, 2009). https://www.cbd.int/doc/publications/cbd-ts-46-en.pdf.

[7] Lauretta Burke and others, *Reefs at Risk Revisited* (Washington, D.C., World Resources Institute, 2011). http://pdf.wri.org/reefs_at_risk_revisited.pdf.

the open ocean that is completely devoid of oxygen has quadrupled since 1960.[8] Many other areas experience a shortage of oxygen at dangerous levels, which has already been shown to significantly reduce the habitats of migratory fish species. Ocean acidification and ocean deoxygenation commonly occur together at a depth of 200 m to 1,000 m.[9] Increases in upwelling are bringing high-carbon dioxide,[10] low-oxygen waters into shallow waters,[11] where they can have a major impact on coastal fisheries and livelihoods.

9. Ocean acidification and deoxygenation must be observed and researched together with ocean warming, which is a master variable that affects oxygen limitation and response to acidification. The extra heat that oceans absorb owing to increased atmospheric levels of greenhouse gases also directly affects ecosystems. Fisheries are beginning to redistribute, for example by shifting away from the equator, while many coral reefs are experiencing major bleaching events. Habitat loss and the loss of ecosystem services directly affect hundreds of millions of reef-dependent people. Solutions must address all three problems (ocean acidification, loss of oxygen and ocean warming) in concert.[12] Although the surface ocean is changing the fastest, the uptake of heat and carbon dioxide from the atmosphere is also rapidly changing the temperature, the pH and the oxygenation of the deep oceans, with consequences for their ecosystems.[13]

III. Challenges and opportunities

10. Although ocean acidification is an observable and predictable consequence of increasing carbon dioxide emissions, the precise scope of its impact on the marine environment remains unclear. For example, many questions remain about the biological and biogeochemical consequences of acidification and the accurate determination of subcritical levels, or "tipping points", for global marine species, ecosystems and services. Most of the understanding of the biological impacts of ocean acidification is derived from studies of the responses of individual organisms.

11. Ocean basins and their ecosystems have evolved separately, meaning that their biological responses to changing pH levels, oxygen content and temperature are different. For example, the north-east Pacific is experiencing greater changes than the northern Atlantic, yet some organisms there may be more tolerant. There is, therefore, a need for information on impacts at the ecosystem level, which would include the interaction of multiple stressors, including those relating to climate change.

---

[8] Sunke Schmidtko, Lothar Stramma and Martin Visbeck, "Decline in global oceanic oxygen content during the past five decades", *Nature*, vol. 542, No. 7642 (February 2017), pp. 335-339. http://www.nature.com/nature/journal/v542/n7642/index.html.

[9] Lisa Levin and Denise Breitburg, "Linking coasts and seas to address ocean deoxygenation", *Nature Climate Change*, vol. 5 (May 2015), pp. 401-403. http://www.nature.com/nclimate/journal/v5/n5/full/nclimate2595.html.

[10] W.J. Sydeman and others, "Climate change and wind intensification in coastal upwelling ecosystems", *Science*, vol. 345, No. 6192 (July 2014), pp. 77-80. http://science.sciencemag.org/content/345/6192/77.full.

[11] Richard Feely and others, "Evidence for upwelling of corrosive 'acidified' water onto the Continental Shelf", *Science*, vol. 320, No. 5882 (June 2008), pp. 1490-1492. http://science.sciencemag.org/content/320/5882/1490.

[12] Denise Breitburg and others, "And on top of all that ... coping with ocean acidification in the midst of many stressors", *Oceanography: Emerging Themes in Ocean Acidification Science*, vol. 28, No. 2 (June 2015), pp. 48-61.

[13] Lisa Levin and Nadine Le Bris, "The deep ocean under climate change", *Science*, vol. 350, No. 6262 (November 2015), pp. 766-768. http://science.sciencemag.org/content/350/6262/766/tab-pdf.

12. Whereas trends for open-ocean pH are well known, data are lacking in many locations, especially coastal regions, where natural variability can be large.[14] Thus, in many cases, the direction of change is known, but uncertainty remains about the timing and rate of change and its magnitude and spatial pattern. This calls for a better understanding of the system-level impacts of ocean acidification.

13. In that regard, it is important to develop indicators for the impact of ocean acidification in addition to the top-level indicator for target 14.3 of the Sustainable Development Goals, "Average marine acidity (pH) measured at agreed suite of representative sampling stations". For example, aragonite saturation state is arguably a more ecologically relevant measurement than marine acidity, while three-dimensional mapping of the distribution of sensitive species in ocean space may be as crucial as the measurement of acidity itself. Particularly valuable indicator systems are tropical coral reefs, cold-water coral ecosystems, polar seas and carbonate plankton-based trophic chains. Developing a proper indicator framework for target 14.3 could improve the tracking of progress and the implementation of actions. This could, as far as possible, encompass water quality parameters (for example, aragonite saturation and pH), physiological parameters (such as calcification, skeletal density and growth of indicator species) and ecosystem parameters (for example, benthic composition and production/erosion rates). The development and implementation of indicators would require enhanced scientific cooperation.

14. Governments and academia are the primary drivers of ocean acidification monitoring and research, but the private sector, with its great reach and technical capacity, should be more engaged. Global ocean acidification monitoring is too great a challenge to be achieved without the engagement of all sectors. Significant opportunities exist in the form of enhanced collaboration among countries; scientific programmes on ocean acidification; relevant intergovernmental bodies, such as regional fisheries management organizations and arrangements and regional seas conventions and action plans; academia; and civil society in conducting research to achieve an understanding of the impacts of and the risks associated with climate change and ocean acidification.

15. An example of an innovative idea to foster the engagement of the private sector is the $2 million Wendy Schmidt Ocean Health XPRIZE, a competition for developing breakthrough ocean pH sensors to improve the understanding of ocean acidification. A number of the competing teams are now commercially producing state-of-the-art pH sensors, some of which are being deployed globally and on Argo floats in the southern hemisphere. The opportunity exists to use these technologies to fully monitor the status of ocean acidification changes across the world's oceans, from the deep sea to the coast, and in lakes and rivers. Nevertheless, the complete implementation of such a global monitoring system remains a challenge.

16. There is also a need to improve the understanding of the social and economic impacts of ocean acidification, in particular to produce improved damage estimates, which can be used to support climate policy decisions, including mitigation and adaptation planning.

17. An analysis of the implications of ocean acidification for the implementation of the 2030 Agenda for Sustainable Development is warranted to identify those goals and targets to which ocean acidification is likely to pose additional challenges.

---

[14] Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis — Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Thomas F. Stocker and others, eds. (Cambridge and New York, Cambridge University Press, 2013). http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf.

The analysis could also identify how the implementation of the 2030 Agenda can address ocean acidification by reducing carbon dioxide emissions, enhancing ecosystem resilience to ocean acidification, locally mitigating its impacts or otherwise reducing economic and social vulnerability. In addition, such an analysis could be used to explore the establishment of further targets at the global level, as appropriate.

18. Climate change mitigation measures will play a crucial role in slowing ocean acidification and minimizing its impacts. The two issues of ocean acidification and climate change (Sustainable Development Goal 13) therefore need to be considered in an integrated manner. In that regard, an opportunity to address ocean acidification is to consider it within the process of the United Nations Framework Convention on Climate Change and in the context of the commitments made under the Paris Agreement, including by supporting access to climate finance to address the impacts of climate change on the ocean and its resources, noting the need for simplified access and the special circumstances of small island developing States.

19. In response to climate change, many States have initiated programmes for energy production from new and renewable resources (Sustainable Development Goal 7). By reducing carbon dioxide emissions, an increased use of renewables would also address the impacts of ocean acidification. The oceans, a relatively unexploited source of energy, can be used to produce renewable energy through their waves and tidal force, thereby contributing to sustainable development. Innovation and technological change can also provide new opportunities for economies to develop technologies, such as wind energy and solar energy, that produce less carbon dioxide while increasing their economic benefit (see A/67/79 and Corr.1).

20. Building the resilience of ecological and socioeconomic systems could also contribute to minimizing the impacts of ocean acidification, by minimizing the impact of other anthropogenic stressors. For example, the effective implementation of the United Nations Convention on the Law of the Sea and other relevant legal instruments aimed at limiting marine pollution and curtailing overfishing would have a positive effect on the ability of marine ecosystems to adapt to acidifying conditions (see A/68/71). Another way to build resilience is by maximizing the likelihood of the survival of marine species through, for example, the conservation of coastal and marine areas to create refuges for important biodiversity.

21. Other opportunities to minimize and address the impact of ocean acidification exist through:

(a) Science, by fostering joint experiments and research opportunities involving scientists from developing and developed countries and by supporting the dissemination of experimental results in highly visible publications;

(b) Capacity-building, by creating training and mentorship programmes linking young researchers from developing countries to established experts in the field of ocean acidification and by encouraging industry to support research facilities in developing countries;

(c) Communication, by finding new ways to reach out to broader audiences, such as through a targeted international communication campaign on ocean acidification, and by strengthening communication that addresses the needs of different stakeholders, including policymakers, environmental planners and managers and the private sector, which can support and enable action across sectors.

IV. Existing partnerships

22. Strategic partnerships between United Nations and universities and research institutes are essential to effectively identify and address research and knowledge gaps, which still exist in areas highly vulnerable to ocean acidification, and to facilitate the implementation of target 14.3.

23. Government and academic researchers are the main actors, with positive examples of successful networks and integrated projects. Government agencies typically sponsor long-term monitoring programmes, and many academics contribute through in-depth, focused projects. Several national and multinational research projects on ocean acidification have emerged in recent years, including the National Oceanic and Atmospheric Administration ocean acidification programme of the United States of America, the ocean acidification programme of the United Kingdom of Great Britain and Northern Ireland, the Pacific Partnership on Ocean Acidification of New Zealand, the European Project on Ocean Acidification and monitoring by the North Pacific Marine Science Organization, the International Council for the Exploration of the Sea and the Pacific Islands Global Ocean Observing System.

24. Some international coordination platforms have been established to promote, facilitate and communicate about global activities. For example, the Ocean Acidification International Coordination Centre, under the auspices of the International Atomic Energy Agency (IAEA), was announced at the United Nations Conference on Sustainable Development and began its work early in 2013; the Framework for Ocean Observing was developed by the Global Ocean Observing System and the International Ocean Carbon Coordination Project, led by the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization;[15] and the International Alliance to Combat Ocean Acidification, a newly formed international network of organizations and Governments (including those of Chile, France and provinces and states in Canada, Nigeria and the United States) built to address ocean acidification and other threats from changing ocean conditions. The World Meteorological Organization and IAEA jointly organize an annual meeting on carbon dioxide, other greenhouse gases and related measurement techniques, and the nineteenth such meeting will include a session on observations of greenhouse gases in oceans.

25. Building on the work of the Framework for Ocean Observing, the Global Ocean Acidification Observing Network was created in 2012 to expand coverage of ocean acidification measurements to areas where there are currently little or no data, provide a global understanding of ocean acidification conditions and ecosystem response and inform modelling efforts and, ultimately, policy development. The Network has more than 350 members from 66 countries and organizations and works closely with the Intergovernmental Oceanographic Commission, the Ocean Acidification International Coordination Centre and other relevant bodies. Since its launch, it has contributed significantly to advancing ocean acidification-monitoring worldwide by engaging scientists from low-income countries and providing training and guidance. The Network includes a data portal, which centralizes all existing and quality-controlled ocean acidification-observing data and would contribute to the implementation of and reporting on target 14.3.

26. The Deep Ocean Observing Strategy, a programme within the Global Ocean Observing System, is being developed to expand and integrate ocean acidification

[15] J. A. Newton and others, "Global ocean acidification observing network: requirements and governance plan", 2nd edition (Ocean Acidification International Coordination Centre, 2015). Available from www.iaea.org/ocean-acidification/act/GOA-ON%202nd%20edition%20final.pdf.

measurements in the deep ocean, that is, at below 200 m. This can inform deep-sea scientists of needs and opportunities, including that of collaborating with or building the capacity of small island/large-ocean developing States that have large areas of deep sea and are considering or already have the active use of deep water for energy, mining or fishing. In addition, the Deep Ocean Stewardship Initiative brings together deep-ocean scientists, representatives of industry, regulators and policy experts and is able to address the intersection of climate-related ocean changes, including acidification, with societal uses of the oceans.

27. With regard to the impact of ocean acidification on ecosystems, an example of partnership is the Global Coral Reef Monitoring Network of the International Coral Reef Initiative, which works to strengthen the provision of best available scientific information on and communication of the status and trends of coral reef ecosystems, to assist in their conservation and management. The main activity of the Network is the preparation of global reports and of regional periodic assessments of the status, trends and outlook with regard to coral reefs. Initiatives such as the special report on climate change of the Intergovernmental Panel on Climate Change, and its reports on the oceans and the cryosphere, are also expected to increase knowledge of the impact of specific and combined effects of changes in climate-related variables (such as warming, acidification, oxygen loss and dust inputs) on productivity, species distribution and exclusion, habitat compression and food webs.

28. In a global policy making context, the General Assembly has addressed issues relating to ocean acidification in its resolutions on oceans and the law of the sea, urging States to make significant efforts to tackle the causes of ocean acidification, further study and minimize its impacts and enhance cooperation at all levels, including the sharing of relevant information and the development of worldwide capacity to measure it. The outcome document of the resumed Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, held in May 2016, calls for the strengthening of efforts to study and address the adverse impacts of climate change and ocean acidification and to explore ways to incorporate the consideration of those impacts into decision-making processes relating to the adoption of conservation and management measures. In 2013, at the fourteenth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, discussions were focused on the impacts of ocean acidification on the marine environment (see A/68/159); at the eighteenth meeting of the process, to be held from 15 to 19 May 2017, discussions will be focused on the effects of climate change on oceans and the issues of cooperation, coordination and partnerships (see A/AC.259/L.18 and A/72/70).

29. Work under the Convention on Biological Diversity has resulted in a scientific synthesis of the impacts of ocean acidification on marine and coastal biodiversity and guidance in how to enhance the resilience of ecosystems through a range of management measures.[16] In particular, the voluntary specific workplan on biodiversity in cold-water areas within the jurisdictional scope of the Convention, which was adopted by the Conference of the Parties in its decision XIII/11, includes actions focused on better understanding, avoiding, minimizing and mitigating the combined and cumulative effects of multiple stressors, including ocean acidification, on biodiversity in cold-water areas.

[16] See Secretariat of the Convention on Biological Diversity, *An Updated Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity*, Technical Series No. 75 (Montreal, 2014). Available from www.cbd.int/doc/publications/cbd-ts-75-en.pdf.

30. Partnerships to address the socioeconomic impacts of ocean acidification have been promoted by international organizations. For example, the Food and Agriculture Organization of the United Nations, together with partners, has taken stock of the available knowledge on the impacts of climate change on the fisheries and aquaculture sector and their consequences for food security. In addition to flagship publications summarizing relevant information,[17] field projects have been developed in Africa, Asia, Latin America and the Caribbean to assess the vulnerability of coastal communities relying on fisheries and aquaculture resources, identify suitable adaptation options and strengthen institutional and local capacities to foster adaptation. Wherever relevant, ocean acidification is addressed as one of the stressors affecting the coastal resources that sustain fisheries and aquaculture.

31. The International Organization for Migration, and the Ocean and Climate Platform, an international ocean and climate think tank that comprises more than 70 organizations established with the support of the Intergovernmental Oceanographic Commission, have worked together to address the challenge that climate change poses to oceans and the degradation of marine ecosystems in terms of its impact on human migration. In addition, the Intergovernmental Oceanographic Commission is working with the Ocean and Climate Initiatives Alliance foster specific action and solutions and to bring together existing initiatives on issues relating to climate and oceans.

32. Partnerships aimed at ameliorating the impacts of ocean acidification include the International Blue Carbon Initiative, which is coordinated by the Intergovernmental Oceanographic Commission, Conservation International and the International Union for Conservation of Nature and works to protect and conserve coastal blue carbon ecosystems through scientific capacity-building activities, and the International Partnership for Blue Carbon, which focuses on awareness-raising, the exchange of knowledge and accelerating practical action.

V. Possible areas for new partnerships

33. It should be a high priority for all Member States to enhance close collaboration among countries, international organizations (including regional fisheries management organizations and arrangements), regional seas conventions and action plans, scientific organizations, academia and civil society in conducting research to achieve an understanding of the impacts of and risks associated with climate change and ocean acidification (see A/CONF.210/2016/5). Partnerships need to be ambitious enough to make meaningful progress in helping coastal communities and ecosystems to adapt and build resilience to ocean acidification and climate change.

34. Some of the most pressing emerging areas for possible new partnerships are related to strengthening the science of ocean acidification. This includes supporting the establishment and operation of a global ocean observation and monitoring system, emphasizing in particular integrated observation and monitoring in ocean physics, geobiochemistry, biology and ecosystems, and monitoring climate change and its impacts comprehensively. In that regard, it is important to strengthen existing ocean acidification monitoring and forecasting, including by geographically and institutionally building on and expanding the Global Ocean Acidification Observing Network and regional ocean acidification networks, such as the Latin American Ocean Acidification Network and the Ocean Acidification-Africa

[17] Food and Agriculture Organization of the United Nations, "Global strategies and knowledge on climate change and fisheries and aquaculture" (2016). http://www.fao.org/fi/static-media/ClimateChange/FAOFisheriesandAquacultureClimateChangePublications.pdf.

Network. Modelling and forecasting partnerships could be aimed at improving the accuracy of projections regarding the timing of and the rate of change in climate change and ocean acidification and magnitude and spatial patterns at a finer spatial resolution. Partnerships relating to ocean acidification data could encourage open access to data and research, including promoting means of managing and disseminating data and information. There is also a gap in formal partnerships addressing ocean acidification in the deep ocean and on the high seas. In that regard, partnerships to establish deep ocean-focused ocean acidification programmes could be established or become a subgroup within existing alliances, such as the Deep Ocean Observing Strategy within the Global Ocean Observing System. Partnerships with industry could lead to improvements in ocean observation of climate change, ocean acidification and changes in marine biodiversity and provide possible sustained funding for ocean observation and monitoring programmes.

35. The assessment of the impact of ocean acidification on marine ecosystems is another area for new and strengthened partnerships. This includes partnerships to assess the role of the ocean in critical processes, such as carbon dioxide absorption and the water cycle of the earth system; increase knowledge of how the proportion of the carbon dioxide absorbed by the ocean will change in the future and its consequences for ocean acidification, including climate system feedbacks; conduct research on the impacts of oceans' complex changes on marine ecosystems, in particular marine habitats, spawning sites and feeding grounds; conduct constant monitoring, surveying and impact assessments of the consequences of climate change with regard to oceans, including sea level rise; take active counter-policy measures to narrow the affected areas and the scope of ocean acidification; support integrated vulnerability assessments focused on ecosystems and associated services, including evaluating the direct effects of ocean acidification on fish populations and increasing knowledge of the food webs that support them; develop a "low-cost" methodology to measure the impacts of climate change and ocean acidification on marine biodiversity and ecosystems; understand and address the cumulative impacts of ocean acidification and other stressors, including deoxygenation, increased temperature, pollution, sea level rise, reduced sea-ice cover, coastal erosion and overfishing; assess the vulnerability of sentinel marine species that have economic, social and cultural importance; and invest in case studies to provide a more in-depth understanding of the vulnerability of key resources to ocean acidification.

36. There is also a need to increase the understanding of and address the vulnerability of specific ecosystems (such as coral reefs and fragile ecosystems of the polar regions) to multiple stressors and to promote ecosystem-based and holistic approaches to natural resources management, adaptation and mitigation so as to address the multiplicity of drivers affecting oceans and coastal areas. In this regard, it is important to build on existing partnerships, including by strengthening the Global Coral Reef Monitoring Network at the global, regional and national levels, including by enhancing data and reporting services and establishing regional networks and nodes.

37. Addressing ocean acidification also requires new partnerships to assess its social and economic impacts, including on the livelihoods and food security of communities that depend on marine ecosystems. New partnerships are needed to explore ways to incorporate into decision-making the processes relating to the adoption of conservation and management measures, in line with the precautionary approach, consideration of the adverse impacts of climate change and ocean acidification, and the uncertainties regarding such impacts on fisheries and fish stocks, including in relation to migration patterns, productivity and the vulnerabilities of individual species to changes in marine ecosystems. These

partnerships could work to identify options for reducing such risks, promoting the health and resilience of marine ecosystems, sharing information and identifying and sharing best practices in this regard (see A/CONF.210/2016/5).

38. There is also a need to assess the social and economic impacts of efforts to address ocean acidification. For example, new partnerships could assess the potential environmental and socioeconomic impacts of marine geoengineering approaches on the marine environment, in accordance with relevant legal and policy instruments.

39. In terms of adaptation to ocean acidification, partnerships could strengthen early warning systems and promote ecosystem-based approaches to adaption. This may include reducing other local stress factors, such as land-based pollution; creating marine protected areas, blue carbon mitigation efforts and grey-green infrastructure; and incorporating ocean acidification into ecosystem-based and coastal zone management plans to increase the resilience of coastal ecosystems and communities. Partnerships could strengthen the dialogue between natural scientists and socioeconomists on identifying vulnerabilities and possibilities for adaptation, where relevant, and on drawing on successful partnerships and lessons learned from other domains, such as climate change. Partnerships could also increase the application of scientific results to improve marine economies.[18]

40. In relation to mitigation, new partnerships are needed to work towards reducing the emissions of greenhouse gases by the maritime and fisheries sectors. Partnerships could also explore the use of ecosystem-based approaches to mitigation, grey-green infrastructure and blue carbon ecosystems, and incorporate ocean acidification into ecosystem-based and coastal zone management plans to increase the resilience of coastal ecosystems and communities.

41. Partnerships could also be established to promote relevant policies and capacity-building, to address ocean acidification. This includes partnerships to encourage consideration of vulnerability to ocean acidification in national adaptation plans; enhance the technical capacity development of vulnerable countries through the establishment of regional training centres, to increase cooperation among States on ocean-climate research and multidisciplinary observation;[19] and develop tools for integrated decision-making, taking into consideration the impacts of ocean acidification and climate change on marine biodiversity and ecosystems.

VI. Guiding questions for the dialogue

42. The following are proposed questions to guide discussions at the partnership dialogue:

- How can the measurement of ocean acidification at the national, regional and global levels be improved?
- What adaptive measures can be taken to improve the sustainability of resources and the ecosystems that they rely on in the face of stress from ocean acidification?

[18] One possibility is a strategic alliance with the Global Partnership for Climate Change, Fisheries and Aquaculture, a voluntary partnership of governmental, non-governmental and civil society organizations sharing a concern for better recognition of the sector in global climate change policy development and action and recognizing the need for coordinated action.

[19] See General Assembly resolution 69/15, para. 58 (f).

- What effective mitigation and adaptation measures currently exist, and what new ones can be put in place?
- How will partnerships help communities and ecosystems to minimize and address the impacts of ocean acidification in a meaningful way?

United Nations A/CONF.230/7

General Assembly

Distr.: General
2 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 9 of the provisional agenda*
Partnership dialogues

Making fisheries sustainable

Concept paper prepared by the secretariat

I. Introduction

1. The present concept paper for the partnership dialogue on the theme "Making fisheries sustainable", prepared in response to General Assembly resolution 70/303, covers targets 14.4 and 14.6 of the Sustainable Development Goals. The paper is based on inputs received from Member States, intergovernmental organizations, the United Nations system and other stakeholders.[1]

2. More than 3 billion people rely on fish as an important source of animal protein and 300 million people rely on marine fisheries for their livelihoods. In developing and developed countries alike, the consumption of fish is increasing both per capita and in absolute terms.

II. Status and trends

3. In 2014 total capture production in marine waters was 81.5 million tons, a slight increase on the previous two years, with 13 out of the 25 major fishing countries increasing their catches by more than 100,000 tons compared to 2013. According to the analysis by the Food and Agriculture Organization of the United Nations (FAO) of assessed commercial fish stocks, the share of fish stocks within biologically sustainable levels decreased from 90 per cent in 1974 to 69 per cent in 2013.[2] Overfishing, including discards, destructive fishing practices and "ghost

* A/CONF.230/1.

[1] Given the word limit not all inputs have been included in their entirety, but they can be accessed at https://oceanconference.un.org/documents.

[2] FAO, *The State of World Fisheries and Aquaculture 2016: contributing to food security and*

Please recycle

fishing" (killing fish as a result of discarded or lost equipment) lead to a loss of $80 billion annually in potential revenue.[3]

4. Illegal, unreported and unregulated fishing, a severe stress on global fisheries, is responsible for approximately 11 million to 26 million tons of fish catches and $10 billion to $22 billion in revenue.[4] Although emphasis is often put on illegal, unreported and unregulated fishing activities occurring in areas under national jurisdiction, it is also a serious concern on the high seas.

5. Aquaculture production, a rapidly growing sector, currently provides half of the fish products covered in global statistics and, in this regard, States and regions should be encouraged to have effective governance and regulatory arrangements in place to support sustainable development.

6. Fish and fisheries are important to livelihoods and food security and nutrition. It is estimated that fish accounts for 17 per cent of animal protein and 6.7 per cent of all protein consumed globally. Millions of people around the world find a source of income and livelihood in fisheries and in the aquaculture sector. Estimates indicate that 56.6 million people are engaged in the primary sector of capture fisheries and aquaculture. In 2014, small-scale fisheries provided work to 90 per cent of the people employed in capture fisheries.[2]

7. Such trends must be examined against the backdrop of climate change. Warming oceans are changing the behaviour of fish stocks, generally pushing them towards the poles and to deeper water, as well as changing the metabolic rates, range and reproductive capacity of some species. Sea level rise endangers mangroves and sea grasses that protect coastal fisheries, and coral bleaching and other climate change-induced natural phenomena threaten the fish stocks that depend on reefs for survival.

8. Recognizing the urgency of the situation, States, individually and through regional fisheries management organizations or arrangements, are working to restore fisheries, taking a precautionary approach when complete data are not available. They are developing conservation and management measures to reduce overfishing through science-based management plans and harvest regulation, and through regulations, policies and tools to address illegal, unreported and unregulated fishing and destructive fishing practices.

9. The United Nations Convention on the Law of the Sea, which sets out the legal framework within which all activities in the oceans and seas must be carried out, sets out the rights and duties of States in the different maritime zones for the conservation and management of marine living resources. The rights over fisheries referred to in the Convention are accompanied by concordant obligations to conserve and manage fish stocks, for example, by requiring coastal States to determine the total allowable catch of the living resources in their exclusive economic zones and to cooperate in the case of shared stocks and contiguous areas. Collaboration among States also takes place at the global level in accordance with other international instruments that support sustainable fisheries, including both binding and voluntary commitments, for example, the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of

---

nutrition for all (Rome, 2016).

[3] Kieran Kelleher, "Discards in the world's marine fisheries. An update", FAO Fisheries Technical Paper, No. 470 (Rome, FAO. 2005).

[4] United Nations, "The First Global Integrated Marine Assessment: World Ocean Assessment I" 2016. Available from http://www.un.org/Depts/los/global_reporting/WOA_RPROC/WOACompilation.pdf.

Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 Fish Stocks Agreement), the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing of FAO and the Code of Conduct for Responsible Fisheries and related instruments also of FAO, as well as through regional agreements and organizations. Nationals of other States fishing within the exclusive economic zone are required to comply with the conservation measures and other terms and conditions established by the coastal State.

10. Similarly, the right of vessels from all States to fish on the high seas is accompanied by an obligation for States to take, or cooperate with other States in taking, measures for their respective nationals, that are necessary for the conservation of the living resources of the high seas and to cooperate with each other in the conservation and management of such resources.

11. The Convention also requires cooperation in the conservation and management of straddling and highly migratory fish stocks. This duty to cooperate is given effect to, and elaborated upon, through an implementing agreement to the Convention, the 1995 Fish Stocks Agreement. However, the provisions relating to the conservation and management of fish stocks are not fully implemented, as overfishing, illegal, unreported and unregulated fishing and destructive fishing practices continue to challenge the sustainability of fisheries around the world.

12. While the overall trend regarding the sustainability of fisheries is overwhelmingly negative, some progress has been made with regard to the sustainability of some fish stocks, particularly through effective regulation and monitoring. A number of actions are being taken to improve the sustainability of fish stocks, including through increasing the understanding of resources and the ecosystems they inhabit, strengthening the institutions responsible for the management of fisheries, improving regulatory regimes, increasing compliance and addressing the economic and social factors that contribute to overfishing. Increased attention is also being paid to improving the overall health and resilience of marine ecosystems to maintain and improve their yield in the face of increasing anthropogenic stressors.

13. Significant progress has been made in the identification of vulnerable marine ecosystem indicator species and in the development of conservation and management measures to protect those ecosystems, including those of bottom fisheries and deep-sea fish stocks. The measures include threshold levels for vulnerable marine ecosystem indicator species, move-on rules and temporary or permanent closures, closed areas (including those with vulnerable ecosystems), restrictions on vessel types and time spent fishing, restrictions on legal mesh sizes and the size of fish that can be caught, restrictions on by-catch, catch and effort reporting, gear restrictions, measures for exploratory fisheries, precautionary catch limits and prohibitions on directed fishing. Regional fisheries management organizations and arrangements and States are cooperating on marine scientific research and data collection and capacity-building activities for developing States (A/71/351).

14. Subsidies and other types of support measures to the fishing industry are granted for a variety of purposes. In many cases, they are not directed at increasing fishing capacity or effort as such. They can, if properly designed, support crew safety; support fish processing by local populations; enable value addition; facilitate the establishment of fish stocks management systems; finance less harmful fishing methods; and promote the adoption of more sustainable technologies, and therefore provide for the restoration and rehabilitation of ecosystems. On the other hand, many fisheries subsidies actively contribute to overcapacity and the depletion of fish stocks, and subsidies can be damaging and trade distorting even in effectively

managed fisheries. Subsidies that encourage overcapacity and overfishing result in losses for States, and those losses are often borne by communities that are dependent on fishery resources for their livelihood and their food security, and by taxpayers.[5] Subsidies may benefit industrial fleets or, even, in some cases, illegal activities. Subsidies that contribute to the depletion of coastal fisheries cause fishing fleets and enterprises to look further and fish deeper beyond the territorial sea. Consequently, subsidized capacity and effort may be diverted to new species and areas, which can perpetuate some of the aforementioned problems.

15. Data on subsidies are subject to debate. Several direct estimates of subsidies and financial transfers to the fisheries sector have been made, with a 2016 study placing total subsidies at about $35 billion in 2009 dollars, of which $20 billion is categorized as harmful or capacity-enhancing subsidies that contribute to overcapacity and overfishing.[5] Between 60 per cent and 80 per cent of the total global subsidy is provided by developed countries.

16. After more than 16 years of negotiations in the World Trade Organization (WTO), no agreement has yet been reached on a multilateral framework to regulate fisheries subsidies. WTO members recently entered a period of renewed activity, with members, including the European Union, the African, Caribbean and Pacific States and a group of Latin American States, submitting new proposals. In addition to the WTO negotiations, other international and regional initiatives have been advanced over the past two years. At the tenth Ministerial Conference of WTO in December 2015, a group of 26 WTO members issued a joint statement calling for the prohibition of subsidies that contribute to overfishing and overcapacity, and subsidies linked to illegal, unreported and unregulated fishing, in line with target 14.6 of the Sustainable Development Goals. In September 2016, a group of 12 WTO members launched an initiative to prohibit harmful subsidies through plurilateral negotiations in WTO.

17. Some Governments are starting to introduce national reforms to reduce subsidies that could contribute to overfishing and overcapacity and to shift their support towards more sustainable and less harmful activities.

18. The adoption of target 14.6 of the Sustainable Development Goals has also stimulated multilateral agencies, individual countries, civil society and academia to further address the issue of subsidies. In the global policy setting, the General Assembly, in its resolution 69/109, recalled that, in "The future we want" (resolution 66/288, annex), States reaffirmed their commitment in the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation) to eliminate subsidies that contribute to illegal, unreported and unregulated fishing and overcapacity, taking into account the importance of the fishing sector to developing countries, and reiterated their commitment to conclude multilateral disciplines on fisheries subsidies. In July 2016, an initiative led by the United Nations Conference on Trade and Development (UNCTAD), FAO and the United Nations Environment Programme (UNEP) was launched. The initiative, known as the road map, calls for ending harmful fishing subsidies and delivering on trade-related targets under Sustainable Development Goal 14. UNCTAD, FAO and UNEP also held an Oceans Forum in Geneva in March 2017 to discuss the implementation of the road map and preparations for the Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development (Ocean Conference). Further, the Organization for Economic Cooperation and Development (OECD) is currently revising and expanding its database on support measures for

[5] U. Rashid Sumaila and others (2016). Global fisheries subsidies: An updated estimate. *Marine Policy, 69*, 189-193.

fisheries with the explicit objective of supporting international objectives such as target 14.6 of the Sustainable Development Goals. Moreover, target 14.6 reflects many of the same elements agreed upon under Aichi Biodiversity Target 6 on sustainable fisheries, which was adopted by the Conference of the Parties to the Convention on Biological Diversity in 2010 as part of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets.

III. Challenges and opportunities

19. Globally, there is an opportunity for rebuilding depleted fisheries, including through greater action on preventing, deterring and eliminating illegal, unreported and unregulated fishing, decreasing fishing pressure and increasing environmental safeguards.

20. The ecosystem approach to fisheries management has been recognized in many parts of the world as integral to achieving sustainable fisheries while dealing with the increasingly complex challenges facing oceans and coastal zone development. The approach requires participation, collaboration, and continuous development and sharing of knowledge between sectors to achieve sustainable and adaptive fisheries management cycles. The socioeconomic valuation of fisheries management alternatives is a critical part of such an approach. Implementation of the ecosystem approach to fisheries management needs to be strengthened at the national and regional level. Further dialogue is needed to exchange experiences and to identify appropriate fisheries management instruments for the implementation of the ecosystem approach at different levels.

21. The General Assembly, considers and reviews developments relating to sustainable fisheries and ocean affairs and the law of the sea on an annual basis, as the global institution having the competence to undertake such a review. In this context, the Assembly has played a central normative and policy-setting role through its resolutions, including in relation to fisheries. It has taken numerous actions to strengthen the implementation of the Convention on the Law of the Sea and the 1995 Fish Stocks Agreement and has also addressed specific concerns, such as large-scale pelagic drift-net fishing on the high seas and unauthorized fishing in zones of national jurisdiction. More recently, the Assembly has undertaken a process to consider measures to address the adverse impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep sea fish stocks, which has triggered important action by States, regional fisheries management organizations and arrangements and FAO. In 2016, the Assembly conducted a further review of the actions taken by States and management organizations and arrangements, preceded by a two-day workshop, and a number of concrete recommendations were included in the latest Assembly resolution on sustainable fisheries as a result of that process (resolution 71/123).

22. A number of the General Assembly processes have also addressed sustainable fisheries, including the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea. The Ad Hoc Working Group of the Whole on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects recently oversaw the completion of the First Global Integrated Marine Assessment.[4] The Assessment examines, inter alia, the status of the world's fisheries, as well as their socioeconomic aspects and can serve as a tool for informed decision-making at all levels.

23. The Code of Conduct for Responsible Fisheries, adopted by the Conference of FAO in 1995, and its related instruments, provide a robust framework for national and international efforts, including in the formulation of policies and other legal and

institutional frameworks and instruments, to ensure sustainable fishing and use of aquatic living resources in harmony with the environment.

24. The Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication, complementing the Code of Conduct and endorsed by the Committee on Fisheries of FAO in 2014, represent a global consensus on principles and guidance for small-scale fisheries governance and development towards enhanced food security and nutrition. The Guidelines seek to contribute to and improve the equitable development and socioeconomic condition of small-scale fishing communities alongside sustainable and responsible management of fisheries. There is already evidence of important steps taken in the implementation of the Guidelines, as there is increasing recognition of the need to address small-scale fisheries in a way commensurate with the reality of small-scale fishing communities and of the importance of participatory human rights-based approaches.

25. The Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks was convened in 2006, and reconvened in 2010 and in 2016, to assess the effectiveness of the Agreement in securing the conservation and management of straddling and highly migratory fish stocks by reviewing the adequacy of its provisions and, if necessary, proposing means of strengthening the implementation of those provisions. The recommendations adopted by the Review Conference have stimulated concrete action by States to improve the sustainability of high seas fisheries, including through the General Assembly, FAO and regional fisheries management organizations and arrangements.

26. Efforts to address overfishing and non-compliance and to support the effective implementation of regulations and management frameworks will continue to be challenged and in some cases, undermined, by factors such as the lack of science-based management, weak governance and institutional capacities, as well as low levels of data collection and analysis and monitoring capacity.

27. Measures to combat illegal, unreported and unregulated fishing include the creation and maintenance of the list of vessels accused of, or caught engaging in, illegal, unreported and unregulated fishing, catch documentation and supply chain traceability programmes, and inspection and surveillance schemes. The implementation and coming into force of the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing of FAO is expected to be a major advance in combating illegal, unreported and unregulated fishing globally. Effective implementation of the Agreement will reduce the incentive to engage in illegal, unreported and unregulated fishing and block fishery products derived from such activities from entering national and international markets. The Agreement recognizes the need to provide assistance to developing States for adopting and implementing port State measures and requires parties to cooperate in establishing appropriate funding mechanisms so as to assist developing States in the implementation.

28. Financing gaps continue to pose challenges, including for sustainable fisheries management; monitoring, control and enforcement; stock assessment; capacity-building and for the introduction and scaling up of marine seafood (wild catch and aquaculture), as well as for the greening of seafood supply chains, including through certification schemes that provide opportunities to ensure environmental sustainability while creating market access.

29. Challenges in relation to fisheries subsidies include: fragmented and non-comparable information on State-supported practices relating to the fisheries

sector; the lack of official and reliable data on fisheries subsidies (including the lack of proper notification to WTO); the lack of consensus on how to deal with basic concepts and definitions, including on what constitutes "harmful" fisheries subsidies; the lack of agreement on how to create incentives for all nations with important fishing interests to fully engage in the negotiations; the low level of knowledge and understanding of the main international instruments covering fisheries within members of the trade community, leading to a lack of coordination and coherence between some trade negotiation officials and fisheries management agencies, resulting in unclear or contradictory policy positions; problems in defining content, sequencing and limits of special and differential treatment provisions to be included in new disciplines; and the lack of international agreement on how to address the interests and needs of traditional fisheries communities in fisheries subsidies disciplines and on whether this should apply to both developing and developed countries. Many of those issues have been addressed through stakeholder consultations, analysis and the development of technical solutions that can be built upon further. In addition, while the importance of the issue of fuel subsidies is widely acknowledged, the possibility of developing consensus approaches to such subsidies has been hampered both by the technical complexity of the issue and by political sensitivities.

30. A successful outcome from the ministerial meeting of WTO to be held in December 2017, would positively contribute to the 2030 Agenda by meeting the 2020 deadline set in target 14.6 of the Sustainable Development Goals. In doing so, the development and livelihood needs of developing countries, the least developed countries and small island developing States need to be taken into consideration. It is also important to encourage the implementation of fisheries subsidies provisions in other trade agreements, including at the regional and bilateral levels, in a manner that contributes to target 14.6. As such, a need persists to build coherence and structured dialogue between the trade community, the environmental communities and the fisheries management communities.

31. National Governments, when undertaking internal reforms, should be encouraged to consider target 14.6 of the Sustainable Development Goals, regardless of whether there is advancement at the multilateral level. Existing fisheries subsidies could be redirected to support fisheries management or educate communities, among other beneficial effects.

32. In addition to global and national action, in line with the ecosystem approach, subregional and regional cooperation is an absolute necessity for sustainable management of fisheries and effective implementation of the relevant targets of the Sustainable Development Goals.

33. Strengthening the effectiveness of reporting, monitoring and surveillance of fisheries subsidies at the global, regional and national levels could be an important foundation for fisheries subsidies negotiations and reform. Capacity-building and the provision of technical assistance play an important role in the implementation and realization of targets 14.4 and 14.6 of the Sustainable Development Goals, including, in this instance, in the regulation of trade in fisheries.

IV. Existing partnerships

34. A great number of partnerships cover various aspects of fisheries. More than 30 partnerships were mentioned in submissions put forward for the Conference,[6] involving a range of stakeholders and modalities.

35. As a first form of partnerships, groups of countries are cooperating to jointly manage their fisheries. An often-quoted example is that of the Vessel Day Scheme currently being implemented by Pacific Islands countries who are parties to the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest. The Scheme allows small island developing States to benefit from the tuna resources in their jurisdictions. The eight signatories[7] to the Agreement collectively control between 25 per cent to 30 per cent of the world's tuna supply and approximately 60 per cent of the western and central Pacific tuna supply. Joint fisheries management arrangements made by the parties have been concerned mainly with the management of tuna purse-seine fishing in the tropical western Pacific. Recent actions by the parties include a prohibition on setting purse seines around whale sharks, a ban on fishing near fish-aggregation devices during certain periods of the year, a requirement for 100 per cent observer coverage aboard purse seiners, a minimum mesh size and a requirement for retention of all catch of tuna on board. Agreement-specific measures are also supplemented by the harmonized minimum terms and conditions for access to the Pacific Islands Forum Fisheries Agency member exclusive economic zones by foreign fishing vessels, agreed by all Forum member countries, including the parties to the Nauru Agreement. These terms and conditions apply to all foreign fishing vessels, not just purse-seiners, and include a requirement for an automatic location communicator to be switched on at all times and reporting to the regional vessel monitoring system, minimum standards for reporting to national authorities and a requirement for annual regional vessel registration.

36. Another type of partnership is broad-based in terms of issues and involves national Governments and other stakeholders. For example, the Coral Triangle Initiative on coral reefs, fisheries and food security has six member States (Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands and Timor-Leste) and development partners including the Governments of Australia and of the United States of America, the Asian Development Bank, the Global Environment Facility and non-governmental organizations such as the World Wildlife Fund, the Nature Conservancy, Conservation International and the Coral Triangle Centre. The partnership has been expanded to include universities and regional organizations, and platforms have been established to engage with the private sector, empower women and strengthen local governments. The partnership has a 2020 regional plan of action that addresses fisheries management in relation to ecosystem approaches, along with conservation, marine protection and climate change adaptation issues.[8]

37. The advantages of closer coordination and synergizing between regional and international organizations have also become apparent. An example is the cooperation between regional seas conventions and action plans and regional fisheries bodies, such as the collective arrangement between the Commission for the Protection of the Marine Environment of the North-East Atlantic and the North-East Atlantic Fisheries Commission, and the memorandum of understanding between the

[6] See https://oceanconference.un.org/about.

[7] Kiribati, the Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu.

[8] See www.coraltriangleinitiative.org/.

Mediterranean Action Plan and the General Fisheries Commission for the Mediterranean, which prove to be useful in advancing ecosystem approaches. At the global level, the Secretariat of the Convention on Biological Diversity, UNEP, FAO and others are working to facilitate improved dialogue and collaboration across regional mechanisms through the Sustainable Ocean Initiative global dialogues with regional seas organizations and regional fisheries bodies on accelerating progress towards the Aichi Biodiversity Targets and the Sustainable Development Goals, sponsored by Japan, the Republic of Korea and the European Commission. Through joint capacity-building activities, the Convention on International Trade in Endangered Species of Wild Fauna and Flora has established special cooperation and partnership agreements through resolutions or memorandums of understanding with other international organizations and agreements to address issues related to management of marine species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Joint efforts are also being undertaken through FAO and the Convention on Biological Diversity to provide improved guidance and support for countries in achieving, and reporting progress on, global goals on sustainable fisheries and biodiversity.

38. United Nations system organizations are also involved in partnerships with other stakeholders, for instance, through the Global Sustainable Fisheries Management and Biodiversity Conservation in the Areas Beyond National Jurisdiction Programme (Common Oceans), which was approved by the Global Environment Facility under the lead of FAO and in close collaboration with UNEP and the World Bank. Other partners include Conservation International, the Global Ocean Forum, the International Union for Conservation of Nature and the World Wildlife Fund. Additional partners include regional fisheries management organizations, the International Seafood Sustainability Foundation, the National Oceanic and Atmospheric Administration, BirdLife International, the Pacific Islands Forum Fisheries Agency, the Central America Fisheries and Aquaculture Organization and the parties to the Nauru Agreement. Focusing on tuna and deep-sea fisheries, capacity-building and ocean partnerships, in parallel with the conservation of biodiversity, the Common Oceans programme seeks to promote efficient and sustainable management of fisheries resources and biodiversity conservation in areas beyond national jurisdiction to achieve the global targets agreed in international forums.

39. There are currently a number of partnerships supporting the implementation of the Agreement on Port State Measures, which include States, intergovernmental organizations, non-governmental organizations, regional fishery bodies and others. FAO has recently formulated a global capacity development umbrella programme on support for the implementation of that Agreement and complementary instruments to combat illegal, unreported and unregulated fishing. The five-year programme is country-led and aims to enhance the capacity of developing countries in combating illegal, unreported and unregulated fishing, by strengthening their policy, legal and operational frameworks in line with the Agreement and other relevant international instruments and regional schemes. The establishment of an appropriate funding mechanism under article 21 of the Agreement will assist developing States' efforts in its implementation.

40. International non-governmental organizations have worked to support developing countries to manage their fisheries and are also spearheading partnerships in relation to the social and environmental issues around fisheries, and on sustainable consumption and production in relation to fish and marine products. For example, in 2014, Conservation International initiated a year-long effort, coordinating a global research group with members representing academic institutions, industry and non-profit organizations to identify the major social issues

associated with the global seafood industry. Conservation International is also part of the Coalition for Socially Responsible Seafood, which gathers several non-profit organizations, non-governmental organizations, academic research institutions, bilateral development agencies and business partners.

41. Apart from the innovative initiative launched at the fourteenth session of UNCTAD and currently being spearheaded by FAO, UNCTAD and UNEP (see para. 18, above), very few partnerships focusing on harmful fisheries subsidies seem to exist. There is also a lack of studies documenting the effectiveness and impact of existing partnerships in this area as a whole (i.e., beyond individual partnerships).

V. Possible areas of new partnerships

42. The following areas were indicated as promising for the development of new partnerships in submissions made for the preparatory process of the Conference:

(a) Partnerships with resource-users such as small-scale fishing organizations, including support for their capacity development to allow them to effectively participate in governance and development processes;

(b) Public-private partnerships can promote the development of infrastructure and technical innovation with respect to sustainable fisheries management;

(c) International non-governmental organizations working with the fishing industry in developing countries to help them achieve certification standards, such as the Marine Stewardship Council certification, address illegal, unreported and unregulated fishing and establish sustainable domestic and international supply chains;

(d) Partnership between United Nations entities and stakeholders working on marine ecosystems;

(e) Partnerships between United Nations system organizations, academic institutions and research centres to promote the development of assessment methods and harvest strategies;

(f) Potential for increased regional research collaboration;

(g) Partnerships with relevant national authorities, United Nations entities, regional fisheries management organizations, regional organizations and non-governmental organizations working to combat illegal, unreported and unregulated fishing;

(h) Partnerships to promote awareness and capacity-building directed at improving implementation of the international legal framework for sustainable fisheries, including as contained in the United Nations Convention on the Law of the Sea and the 1995 Fish Stocks Agreement;

(i) Opportunities for strengthening collaboration at the regional level, including between regional fisheries management organizations, regional seas conventions, where appropriate, and the broader regional economic communities such as the Association of Southeast Asian Nations, the Caribbean Community, the Southern African Development Community and, also, the Indian Ocean Commission by linking fisheries management to cross-cutting management instruments such as marine spatial planning, including through global-level dialogue across regional mechanisms;

(j) Possibility of promoting better links between the European Union yellow/red card system, the Convention on International Trade in Endangered Species of Wild Fauna and Flora Appendices and the United States Fish and Wildlife Service Endangered Species Act-listed species criteria, in order to enhance the understanding of thresholds for fisheries sanctions and thresholds for threatened fisheries provisions;

(k) Partnerships for developing and updating global data standards for fisheries and aquaculture;

(l) Partnerships to enhance the sharing of information, experience and good practices on the implementation of sustainable fisheries standards (e.g., FLUX standard), which will contribute to internationally harmonized processes for sustainable fisheries management;

(m) Partnerships between relevant United Nations system organizations and international development institutions to study fisheries value chains and the use of sustainability standards;

(n) At the national level, partnerships with private sector actors could support Governments in identifying harmful subsidies mentioned in target 14.6 of the Sustainable Development Goals and document their ecological and socioeconomic impact on economies, fisheries and international markets; partnerships with national statistical offices and relevant fisheries bodies could help improve the reporting on subsidies to address data gaps;

(o) Deeper cooperation between United Nations entities, trade agencies and other organizations to gather and analyse existing data on fisheries subsidies and public support measures;

(p) Partnerships between United Nations agencies to support countries in their efforts to reform trade policies, including fisheries subsidies;

(q) In order to foster advances in international negotiations at WTO, it was proposed to foster partnerships with regional initiatives and entities (including regional fishery bodies), especially those incorporating developing countries and small island developing States, so as to assist them in better understanding the issues at stake and in providing necessary inputs to the negotiations;

(r) It was suggested that the Global Environment Facility, in its next phase (2018-2022), should seek to explicitly include provisions for financial support to developing countries for technical assistance and capacity-building, to help them incorporate new rules on fisheries subsidies into relevant national and regional policy and legislation, and build capacity for monitoring, compliance and enforcement;

(s) The strengthening of existing partnerships, building on existing cooperation platforms, such as existing cooperation between regional seas and regional fisheries management organizations, existing science-policy interface platforms and informal cooperation platforms between regional and international bodies and non-governmental organizations and business could be envisioned, with a specific focus on the targets of Sustainable Development Goal 14, related to sustainable fisheries management.

VI. Guiding questions for the dialogue

(a) How can successful multi-country and multi-stakeholder partnerships focusing on fisheries management be replicated or advanced?

(b) In advancing the implementation of target 14.6 of the Sustainable Development Goals at the national, regional and global levels, what type of partnerships could be put in place to curb illegal, unreported and unregulated fishing on the high seas and in situations where monitoring and surveillance capacity is limited or to address harmful fisheries subsidies?

(c) What role could partnerships play to address overfishing, including through the development and implementation of science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield, as determined by their biological characteristics?

(d) How can businesses be more involved, and stakeholder cooperation in general be increased, to facilitate the design of innovative systems, techniques and practices for achieving sustainable fisheries?

United Nations A/CONF.230/8

General Assembly

Distr.: General
1 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 9 of the provisional agenda*
Partnership dialogues

Increasing economic benefits to small island developing States and least developed countries and providing access for small-scale artisanal fishers to marine resources and markets

Concept paper prepared by the secretariat

I. Introduction

1. The present concept paper for the partnership dialogue on the theme "Increasing economic benefits to small island developing States and least developed countries and providing access for small-scale artisanal fishers to marine resources and markets", prepared pursuant to General Assembly resolution 70/303, relates to targets 14.7 and 14.b of the Sustainable Development Goals. The paper is based on [illegible] received from Member States, intergovernmental organizations, the United Nations system and other stakeholders.[1]

2. Partnership dialogue 5 addresses two distinct but interrelated targets under Goal 14: increasing the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism (target 14.7), and providing access for small-scale artisanal fishers to marine resources and markets (target 14.b). A discussion of these two targets must include a range of linked but distinct issues. Oceans provide a wide array of benefits to small island developing States and least developed countries, including, but not limited to, small-scale, artisanal fisheries. Likewise, small-scale artisanal fishers are a

* A/CONF.230/1.

[1] Given the word limit, not all inputs have been included in their entirety, but they can be accessed at https://oceanconference.un.org/documents.

Please recycle

fundamental part of coastal societies in small island developing States and least developed countries, but they can also be found in developed and other developing countries. The Food and Agriculture Organization of the United Nations (FAO) defines small-scale or artisanal fisheries as "traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amounts of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption".[2] Estimates suggest that workers involved in small-scale fisheries comprise over 90 per cent of people employed globally in capture fisheries and related activities, and produce approximately half of the global catch.[3]

3. An effective examination of these issues will require a holistic, integrated approach that takes into account not only their inherent diversity, but also the close links to other Sustainable Development Goals. The unifying theme is livelihoods, primarily from fishing, but also from aquaculture, tourism and other ecosystem services. This means that the discussion can be informed by other Goals, in particular Goal 1 (end poverty), Goal 2 (end hunger), Goal 5 (gender equality), Goal 12 (sustainable consumption and production) and Goal 13 (combat climate change). There are also close links to the other targets under Goal 14.

II. Status and trends

Least developed countries and small island developing States

4. Small island developing States face unique sustainable development challenges, including the small size of their populations, their limited resources, their vulnerability to natural disasters and external shocks and their high dependence on foreign imports. Their growth and development are often hampered by the high transportation and communications costs, the disproportionately high costs of their public administration and infrastructure due to their small size, and the lack or near-lack of opportunities to create economies of scale. Small island developing States are particularly vulnerable to the impact of climate change, such as sea level rise, droughts, floods, coastal surges and typhoons (also known as hurricanes or cyclones). Climate change also affects their marine ecosystems, which are vital in their own right and form an integral part of their economies in sectors such as fisheries and tourism.

5. Many small island developing States have maritime zones that are disproportionately larger than their land territory. The size of the exclusive economic zone of Tuvalu, for instance, is more than 26,000 times that of its land mass. Small island developing States are therefore highly dependent on healthy and productive oceans for their economic development and for the livelihoods of their populations. Currently the predominant ocean-dependent industries in small island developing States are tourism and fisheries. Income from fisheries originates not only from direct exports, but also from licence fees collected from foreign fishing vessels. Other ocean-related industries with increasing potential to deliver benefits are aquaculture, the offshore generation of renewable energy, deep-sea mineral activities and marine biotechnology and bioprospecting. Promising sustainable energy sources include tidal streams, ocean waves, offshore solar, ocean currents and liquid biofuels (for shipping).

---

[2] Food and Agriculture Organization of the United Nations (FAO), "Artisanal fisheries", Family Farming Knowledge Platform, updated 2015, available at http://www.fao.org/family-farming/detail/en/c/335263.

[3] FAO, "Voluntary guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication" (Rome, 2015).

6. Coastal least developed countries often face many of the same challenges as small island developing States, and least developed countries in general are characterized by an insufficient availability of human and institutional capacities, low income levels and unequally distributed income, and a scarcity of domestic financial resources. Their largely agrarian economies are affected by low productivity and low investment, which are mutually reinforcing. They rely on the export of a small number of primary commodities, which makes them highly vulnerable to external terms-of-trade shocks. However, like small island developing States, least developed countries can potentially access significant opportunities in fisheries and other ocean-related sectors. Fish ranks among the top-five export products of 14 of the 48 least developed countries. In addition, 6 of the 16 largest suppliers of fish from inland waters are least developed countries, and one of those, Uganda, is a landlocked developing country.[4]

7. Fisheries management in small island developing States and least developed countries continues to improve, as does the economic value that they derive from fisheries. In the Pacific region, for instance, conventional fisheries management is shifting from single-species maximization to more holistic approaches encompassing biological, environmental, economic and social objectives. Other fisheries-related measures to enhance the economic prosperity of small island developing States and least developed countries include policy and governance support programmes; coastal fisheries assessment and census programmes; sustainable aquaculture support programmes; protected area management programmes; legal provisions on threatened species (e.g., implementation of listings under the Convention on International Trade in Endangered Species of Wild Fauna and Flora); biosecurity and introduced species programmes; integrated land and ocean management programmes; climate change adaptation and resilience programmes; disaster risk management and emergency assistance for the re-establishment of fisheries affected by natural disasters; fisher safety at sea programmes; programmes to combat illegal, unreported and unregulated fishing; and other capacity development activities. In addition, small island developing States and least developed countries are incorporating traditional knowledge into resource use practices and plans.

8. Nonetheless, small island developing States and least developed countries often lack the technical, institutional, technological and financial support that would let them benefit fully from their marine resources. For instance, their relationships with foreign countries that fish in their waters are often complex. By licensing foreign vessels to fish in their exclusive economic zones they can add significantly to their national income. However, if the fees are linked to current world fish prices, the resulting instability can increase their vulnerability. In addition they often lack the institutional and human capacity to develop their own fishing industries. Small island developing States and least developed countries, including those that are landlocked, also suffer from a lack of capacity to take full advantage of the opportunities presented by the growing aquaculture sector.

9. Small island developing States derive significant economic benefit not only from fisheries, but also from tourism, which is overwhelmingly based on oceans, coasts and marine resources. The number of international tourists visiting small island developing States increased from 28 million in 2000 to 41 million in 2013. Tourism accounts for over one quarter of the gross domestic product in many such States and represents 9 per cent of their overall exports. It provides jobs for their communities, depending on the state of development of the local tourism industry.

[4] See FAO, *The State of World Fisheries and Aquaculture: Contributing to Food Security and Nutrition for All* (Rome, 2016).

In small island developing States and in other countries around the world, recreational fisheries are an important element of the tourism sector, and underwater cultural heritage and the outstanding aesthetic quality of coral reef ecosystems have high tourism development potential and can help to create income and employment. Studies show that 37 per cent of world tourism is related to culture and that there is a strong link between the protection of cultural heritage and ecosystems on the one hand and increases in tourism on the other.

10. The tourism industry in small island developing States and coastal least developed countries is taking steps towards enhanced sustainability by improving waste management and energy-efficiency, increasing local employment, building and maintaining local supply chains, managing informal local trading, fostering community-based initiatives and protecting underwater cultural heritage.

11. The United Nations Convention on the Law of the Sea sets out the legal framework within which all activities in the oceans and seas must be carried out. It is of strategic importance as the basis for national, regional and global action and cooperation in the marine sector. It stipulates the limits of the various maritime zones and provides for the rights and duties of States in those zones, including those of small island developing States and least developed countries.[5]

Small-scale artisanal fisheries

12. The small-scale, artisanal fisheries sector, which encompasses all activities along the value chain — pre-harvest, harvest and post-harvest — employs men and women in almost equal measure, with a high female participation in fish processing and small-scale fish trading operations.[6] Some 90 to 95 per cent of the catch produced by small-scale landings is destined for local human consumption.[7] In some developing countries, including small island developing States, small-scale fisheries provide more than 60 per cent of the protein intake of the population. Many indigenous peoples and their communities rely on small-scale fisheries, and recent estimates show that coastal indigenous peoples eat, on average, 15 times more seafood per person than non-indigenous people in the same country.[8] The role of the small-scale artisanal fisheries sector in food security and nutrition is often underestimated or ignored, and its production is rarely reported separately in national catch statistics.

13. In 2014, after a long participatory consultation process, the members of the FAO Committee on Fisheries endorsed a new internationally negotiated instrument dedicated specifically to small-scale fisheries that complements the Code of Conduct for Responsible Fisheries. The FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication set out principles and guidance for securing sustainable small-scale fisheries governance and development. The aim of the FAO Voluntary Guidelines is to enhance the contribution of small-scale fisheries to poverty alleviation, food and nutrition security and economic growth. In addition, they contain direct references to the 2012 Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security of the Committee on

[5] See also the concept paper for partnership dialogue 7.

[6] High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Sustainable Fisheries and Aquaculture for Food Security and Nutrition (Rome, FAO, 2014).

[7] World Bank, *Hidden Harvest*, report No. 66469-GLB (Washington, D.C., 2012).

[8] Andrés Cisneros-Montemayor and others, "A global estimate of seafood consumption by coastal indigenous peoples", *PloS One*, vol. 11, No. 12 (December 2016).

World Food Security (CFS), which support the progressive realization of the right to adequate food in the context of national food security.

14. Regional developments specific to small island developing States that complement global trends include the following:

(a) Caribbean region: A Caribbean regional consultation on the development of international guidelines for securing sustainable small-scale fisheries, held by FAO, the Caribbean Regional Fisheries Mechanism and the Western Central Atlantic Fishery Commission in 2012, confirmed the importance of small-scale fisheries as a contributor to poverty alleviation, food and nutrition security, and economic development in the Caribbean region;

(b) Indian Ocean region: the Council of Ministers of the Indian Ocean Commission recently adopted a new regional fisheries and aquaculture strategy for the period 2015-2025. Its overarching objective is to enable the fisheries and aquaculture sector in States members of the Indian Ocean Commission to fully realize its potential as a contributor to sustainable and equitable growth in the region;

(c) Pacific region: at its ninth meeting, held in 2015, the Pacific Community Heads of Fisheries endorsed the strategy entitled "A new song for coastal fisheries — pathways to change: the Noumea strategy". In doing so, the participants acknowledged the need to pay closer attention to the coastal fisheries sector. In addition, the Vessel Day Scheme, which enables vessel owners to purchase and trade days fishing at sea, is currently being implemented by the eight Pacific island countries that are parties to the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest. Parties to the Nauru Agreement control waters that yield 50 per cent of the world's tuna.[9]

15. In all regions there is a growing recognition that small-scale fishers can be important actors in the implementation and monitoring of fish management systems and that the most effective approaches include their participation. Increasingly fish management systems incorporate traditional practices within a tenure-based governance framework, which helps to relieve some of the pressures from overfishing and overcapacity.

16. The United Nations Convention on the Law of the Sea and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the Fish Stocks Agreement) set out the legal regime for fisheries, including small-scale artisanal fisheries. They contain several provisions that are particularly relevant to small-scale and artisanal fishers, such as those that impose a duty to take into account the interests of artisanal and subsistence fishers and to avoid adverse impacts on, and ensure access to fishing grounds by subsistence, small-scale and artisanal fishers.

17. The General Assembly has addressed the challenges faced by small island developing States and least developed countries, as well as issues related to small-scale fisheries, in its resolutions on oceans and the law of the sea and sustainable fisheries. For example, in its resolution 71/123, the Assembly urged States and relevant international and national organizations to provide for the participation of small-scale fishery stakeholders in related policy development and fisheries management strategies in order to achieve long-term sustainability for such fisheries, consistent with the duty to ensure the proper conservation and management of fisheries resources.

[9] See http://www.pnatuna.com/VDS and the concept note for partnership dialogue 4.

III. Challenges and opportunities

18. Many of the issues facing small island developing States and least developed countries, as well as those facing small-scale fishers, are linked to the megatrends affecting the world at large. Globalization, trade flows, climate change and other forms of environmental degradation, and inequality all make it more difficult for the populations of such countries, in particular their small-scale artisanal fishers, to reap benefits from the ocean. The vulnerabilities specific to such countries, including small scale, remoteness from market hubs, vulnerability to climate change, inadequate infrastructure, gaps in data and statistics capacity, weak governance structures and lack of recognition of tenure and rights, exacerbate those global challenges.

Accessing and benefiting from marine resources

19. As noted above, the vulnerabilities of small island developing States and least developed countries are well known and significant. The long-term sustainability of fisheries resources in small island developing States has been threatened by overexploitation, land-based pollution, climate change and natural disasters, and the inadequacy of fisheries monitoring and control systems. Inshore capture fisheries adjacent to centres of urban population are heavily fished, if not overfished.

20. Small-scale artisanal fishers tend to fish in areas close to the coast and within the exclusive economic zone of a country. Their access to marine resources is compromised in a number of ways, such as by competition from large-scale fishing operations and persistent gaps in essential infrastructure. There is often competition within the small fisheries sector and from other sectors such as tourism, aquaculture, agriculture, energy, mining, manufacturing and the development of infrastructure. Small-scale artisanal fisheries also suffer from high post-harvest losses because of low investment, low-level technology, variability in supply and contamination from land-based pollution, especially during rainy periods.

21. In small island developing States in particular, the growth of coastal tourism brings with it a host of challenges, including the loss of fragile habitats and biodiversity, marine and land-based pollution, inadequate waste management, resource consumption and competition, and limited community engagement and benefit. The tourism industry in small island developing States and coastal least developed countries faces a specific challenge in that warm-water corals, which are vulnerable to the impacts of climate change, form a major part of what makes many tourist resorts in the Caribbean, the Red Sea, the Indian Ocean and South-East Asia attractive. Experts predict that by 2050, most of the world's tropical and subtropical coral reefs, particularly those in shallow waters, will suffer from annual bleaching and will eventually become functionally extinct as sources of goods and services. The severity of the impact of coral bleaching will no doubt be exacerbated by the influx of pollution from land-based sources. In addition, small island developing States and least developed countries often lack the capacity to protect and to facilitate responsible public access to their underwater cultural heritage when it is threatened by pillage, commercial treasure-hunting and the negative impact of some industrial activities.

22. High-impact weather events can critically affect both fisheries and tourism. Thus, long-term sustainable development needs tailored tools to prevent disasters and to make local communities more resilient. Multi-hazard early warning systems provide a useful management tool in that regard. The World Meteorological Organization is developing all elements of a multi-hazard early warning system along the value chain, including research (the World Weather Research Programme

and its High-Impact Weather project), operations (the Global Data-processing and Forecasting System) and communication (the Public Weather Services Programme).

Accessing markets

23. For small-scale artisanal fishers able to access marine resources, the next step in the process, access to markets, presents additional challenges. Their tenure and their rights of access to their resources are not necessarily recognized or respected, making the capture of fish problematic and subject to direct competition from large-scale fishing. Moreover, although tariffs on fish and fish products are relatively low, with an average of 11.6 per cent under the most-favoured nation tariff, it is extremely difficult for small-scale operators to ensure homogeneity in quality, safety and handling practices, as well as in transport and packaging. Agricultural and fish products are generally more exposed to non-tariff measures than industrial manufactures, owing in part to sanitary and phytosanitary measures. For instance, by September 2015, 732 sanitary and phytosanitary measures and 524 technical barriers to trade applicable to fish and fish products had been notified by members of the World Trade Organization, representing a significant annual growth since 2010.[10]

24. The predominantly artisanal or traditional nature of fishing in small island developing States and least developed countries, which coexists side by side with emerging industrial fishing, makes it more difficult for such countries to enforce international standards imposed by major importing markets. For that reason, some small island developing States rely exclusively on fees from fishing licence agreements as an alternative to complying with the international standards imposed by importing countries.

25. Market access for small-scale artisanal fisheries is further restricted by gaps in infrastructure, a lack of investment in or credit for small operators, a lack of common fishery policies among countries that share water resources, and a shortfall in the technological and professional skills needed to meet global safety and quality standards. Those issues are often compounded by power imbalances that favour intermediaries with better access to financial services and market information. Poor countries also lack the capacity to implement international regulations such as vessel enrolment, catch documentation schemes and catch reporting systems. Non-compliance can lead to a vicious circle of restricted access to foreign markets, leading in turn to stagnation in the development of the fisheries industry, which then makes it even more difficult to access those markets.

26. Shipping trends and practices erect yet another barrier for small island developing States and least developed countries, as well as for small-scale artisanal fishers trying to access global markets. According to the International Maritime Organization, over 90 per cent of the volume of international trade in goods is carried out by sea. As shipping networks make use of ever-larger vessels and trans-shipment in hub-and-spoke systems, the remote locations and less-developed port infrastructure of many such countries become significant handicaps. Some of them are served by a very small number of regular container shipping services, which has the potential to lead to oligopolistic or even monopolistic markets. The Liner Shipping Connectivity Index, which has been published by the United Nations Conference on Trade and Development since 2004, measures countries' access to international shipping services. In 2016, the 10 countries with the lowest value on the Index were all small island developing States.

[10] United Nations Conference on Trade and Development, *Trade and Environment Review 2016: Fish Trade* (UNCTAD/DITC/TED/2016/3), part 2.

Opportunities

27. In spite of the various challenges noted above, small island developing States and least developed countries have significant opportunities to reap economic benefit from having ocean-based economies that reconcile economic development with improved livelihoods and social equity while strengthening sustainable, transparent, reliable and more secure food systems. Maximizing those opportunities will require a multi-stakeholder approach in which the ministries responsible for tourism, environment, fisheries, transport and trade, finance and other domains work together to promote sustainable development and economic growth. Fishers and fishery workers are key stakeholders who can play an important role in the development of the ocean-based economy. Civil society can give them the voice they need to fulfil that role.

28. Important actions include implementing policies that promote business activity without increasing pressure on fisheries and improving access to education to foster community development and empowerment and the protection of natural and cultural heritage sites. The transfer and dissemination of fishing technology, as well as the recognition of rights and the granting of preferential access to coastal fishing grounds and improving market infrastructure can also help communities to derive maximum benefits from marine resources in their area. In addition, stakeholders point to the importance of expanding the availability of high-quality data as a prerequisite to effective decision-making. Collaboration among small island developing States and other forms of South-South collaboration will be crucial as well.

29. Voluntary sustainability standards, eco-labelling and traceability systems for wild catch and aquaculture are increasingly significant in the fisheries sector as consumer demand for sustainability, fair trade, organic and biotrade products continues to grow. Seafood production certified under global sustainability initiatives grew fortyfold from 2003 to 2015 and now represents more than 14 per cent of global production. Such standards are becoming a requirement for entry into the markets of some developed countries. As noted above, small-scale artisanal fishers often lack the capacity to implement global regulation programmes, but developing countries and their partners can encourage the uptake of certification schemes by lowering the barriers to entry, including, for instance, by clustering several small fishers in one application.

30. There are opportunities to overcome shipping challenges by investing in trade facilitation and port performance, including, possibly, through public-private partnerships. Steps such as redesigning routes and using feeder and trans-shipment services may also help to increase cargo volumes and strengthen the business case for servicing small island developing States.

31. The following areas represent additional opportunities:

(a) Aquaculture will be an important element of ocean-based economies. In the States members of the Caribbean Community, aquaculture development could increase total fish production by 30 per cent within 10 years if essential investments are made in aquaculture policy, legal frameworks, applied research, capacity-building and information;[11]

(b) The use of marine living resources such as algae in the production of pharmaceuticals and chemicals will be significant, as will the trade in non-edible seafood products for use in cosmetics;

[11] See "Global blue growth initiative and small island developing States" (FAO, 2014).

(c) Marine renewable energy sources, including wave, tidal and ocean thermal energy conversion, have been identified as priority areas for small island developing States in, for example, the recent Martinique Action Plan for Renewable Energy Development on Islands. The Martinique Action Plan contains a call for concrete action to support the transition to renewable energy sources in small island developing States, including to ocean energy;

(d) The deep-sea exploration of minerals and resources has been of particular interest to many small island developing States in the Pacific region. Some of those States have granted permits for deep-sea mineral exploration. Thus far only Papua New Guinea has issued a mining licence for ocean floor mining. The International Seabed Authority offers capacity-building and knowledge transfer services to ensure that small island developing States and least developed countries benefit from any activities relating to deep-sea minerals that they undertake, while safeguarding against damage to their marine environments and underwater cultural heritage sites;

(e) Marine biotechnology could provide an environmentally sustainable opportunity for small island developing States and coastal least developed countries to let their ocean-based economies grow;

(f) Marine spatial planning enables Governments and companies to identify the most suitable geographic area for an activity with a view to promoting the efficient use of maritime space, increasing efficiency of decision-making, reducing conflicts, creating a better investment climate and reducing costs;

(g) Underwater cultural heritage sites and related research for educational and recreational purposes holds much potential for small island developing States and least developed countries;

(h) Maritime transport, ports and related services, shipping and shipbuilding provide additional opportunities for growth.

IV. Existing partnerships

32. The theme of the third International Conference on Small Island Developing States, held in Apia in 2014, was the sustainable development of small island developing States through genuine and durable partnerships. In the 2030 Agenda for Sustainable Development the importance of partnerships is stressed, particularly for least developed countries and other countries in special situations. The international community has initiated numerous partnerships addressing the sustainable use and development of oceans for small island developing States and least developed countries. Of the 308 partnerships represented at the Conference, more than a third (109) were related to oceans. In many such partnerships the private sector is an essential partner in improving the economic benefits reaped by small island developing States.

33. Current partnership priorities include strengthening the capacity of public institutions to promote small-scale fisheries, empowering small-scale fishing communities to take an active role in fisheries management decisions and the marketing of their products, ensuring food security in connection with best practices in fisheries and land management, building a bottom-up approach through community engagement and participation while developing requisite land-use and fisheries management policies, upholding principles of decent work, and applying a human rights-based approach to small-scale fisheries.

34. A large number of regional organizations have specifically included small-scale and coastal fisheries in their policies, strategies and initiatives. Regional organizations play an important role as catalysts for change at the national level, and there are a number of important partnerships and initiatives around coastal fisheries and small-scale fisheries at the regional and subregional levels. Many of those refer to the FAO Voluntary Guidelines as the global reference framework, which provides common ground for action.

35. Many current partnerships are also focused on areas such as investing in and developing stronger weather and climate services for reducing disaster risk, strengthening climate resilience and adaptation, advancing multi-hazard early warning systems, bridging the science-policy gap, and increasing North-South and South-South knowledge-sharing and capacity-building. A complete overview of relevant partnerships can be found at http://sustainabledevelopment.un.org.

V. Possible areas for new partnerships

36. It is vital to continue to implement existing partnerships, looking for opportunities to strengthen and expand them whenever possible and appropriate. In addition, new partnerships can complement existing efforts in a range of areas.

37. Given the integrated nature of the 2030 Agenda for Sustainable Development and the complexity of the challenges relating to achieving Sustainable Development Goal 14, it is important that Governments, international organizations, the private sector, civil society and other stakeholders approach partnerships with a holistic mindset. Member States have emphasized the need to link ocean and fisheries partnerships with, for instance, education and infrastructure assistance to help to ensure an enabling environment. Interventions in fisheries will be more effective if they are coordinated with efforts to advance sustainable agriculture wherever synergies can be found.

38. Areas for new partnerships are outlined in paragraphs 39 to 45 below, but the list is far from exhaustive.

Governance and regulatory frameworks

39. The full implementation of the international legal framework for oceans is essential to maximize the economic and non-economic benefits that small island developing States and least developed countries reap from their ocean-based economies and to effectively regulate the fishing sector, including of small-scale fisheries (see concept notes for dialogues 4 and 7). Moreover, the policy framework contained in the outcome documents of major conferences on sustainable development, including the SIDS Accelerated Modalities for Action (SAMOA) Pathway sets out concrete actions which can be taken to increase benefits to small island developing States and least developed countries, including through partnerships.

40. Institutions at the subnational, national, regional, and global levels will be at their most effective in managing ocean resources if they work in a complementary and coordinated manner. Doing so requires improving cross-sectoral cooperation and coordination at all levels and ensuring consistency and coherence between regulatory approaches at different levels, including through international institutions as appropriate. Regional fisheries management organizations, for instance, can serve as links between the various levels. They are critical players and should be supported. Partnerships can strengthen regional and global networks of institutions to advance coherence in their work.

41. Partnerships can also address the governance of tenure for small-scale fisheries and improve legal frameworks at the national and subnational levels to better reflect regional and international instruments and guidelines, in particular the FAO Voluntary Guidelines and the CFS Voluntary Guidelines. Such partnerships will be effective only if fishers and fish workers, through their organizations, are involved in every stage of the process to ensure that regulatory frameworks, policies and strategies are realistic and appropriate and that they are implemented. Member States have recognized this and have pointed out that regulations should be functional and goal-based in order to make compliance and success universal.

42. Partnerships could also address institutions working for the preservation of the cultural and natural heritage of small island developing States and least developed countries in order to improve their capacities and policies and make their heritage more usable for educational and recreational purposes.

Data

43. The implementation of the 2030 Agenda for Sustainable Development as a whole will be measured using extensive, reliable and disaggregated data, and that exercise will depend on their availability. Goal 14 is no exception. In small island developing States, least developed countries and other countries around the world, small-scale artisanal fisheries are currently undervalued. More data are needed on fish stocks and the revenue generated by artisanal producers.

Capacity-building

44. As the backbone of the fisheries sector, fishing communities will benefit from capacity development partnerships, including partnerships involving managerial, participatory and other related skill training for fishers and their communities. Capacity-building can also address the structural, legal, management and cultural barriers that prevent women from fully accessing fisheries and resources. It is also crucial, in parallel, to build capacity in science and research as well as in cultural heritage preservation in small island developing States and least developed countries.

45. Other areas for capacity-building partnerships include:

(a) Implementation of the FAO Voluntary Guidelines, including through activities addressing safety at sea and through support to stakeholders seeking to make legal changes to benefit small-scale fisheries and improved governance of tenure;

(b) Aquaculture technology, including technology that reduces emissions;

(c) Raising awareness of mutual insurance for fishers and aquaculture insurance;

(d) Advancing the development of invaluable underwater cultural heritage sites can yield significant benefits to small island developing States. Raising the profile of such sites can improve the ocean literacy of communities and Governments and ultimately increase economic benefits to small island developing States and least developed countries alike through tourism;[17]

[17] The United Nations Educational, Scientific and Cultural Organization and the secretariat of the Convention on the Protection of the Underwater Cultural Heritage have offered to make connections with their wide networks of experts, universities and non-governmental organizations not only working to research and protect underwater cultural heritage but also carrying out other kinds of ocean-related work, such as environmental projects.

(e) Building capacity in measures focused on conservation of, for example, marine protected areas, to complement fisheries management measures, while acknowledging that conservation efforts can at times burden the livelihoods of small-scale fishers, and can disproportionately burden small island developing States themselves.

VI. Guiding questions for the dialogue

46. The guiding questions for the dialogue are the following:

(a) What measures are needed for small island developing States and least developed countries to enhance their productivity, diversify their exports of ocean and marine resources, enable them to capitalize on marine biotechnology, advance their use of marine energy, increase their global competitiveness and enable them to make other related progress?

(b) How can small island developing States and least developed countries deepen their engagement in the tourism sector, including through the promotion of their natural and cultural heritage?

(c) How can small-scale artisanal fishing communities be empowered to ensure their secure access to marine resources and markets, the responsible use of marine resources and the equal distribution of benefits derived from the use of those resources?

(d) How can multi-level implementation of the FAO Voluntary Guidelines and directly linked instruments such as the CFS Principles for Responsible Investment in Agriculture and Food Systems and the CFS Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security be accelerated?

United Nations A/CONF.230/9

General Assembly

Distr.: General
1 May 2017

Original: English

United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
New York, 5-9 June 2017
Item 9 of the provisional agenda*
Partnership dialogues

Increasing scientific knowledge, and developing research capacity and transfer of marine technology

Concept paper prepared by the secretariat

I. Introduction

1. The present concept paper for the partnership dialogue on the theme "Increasing scientific knowledge, and developing research capacity and transfer of marine technology", prepared pursuant to General Assembly resolution 70/303, relates to target 14.a of the Sustainable Development Goals. The paper is based on input received from Member States, United Nations system entities and other stakeholders.[1]

2. Marine science plays an important role in the fisheries management process, including for the adoption of conservation and management measures. Science also has an important role to play in managing other human pressures on the marine environment, including from local pressures such as pollution, coastal development and resources extraction, that act together with the global impact of climate change. Technology can play a role in the achievement of many of the targets of Sustainable Development Goal 14, for example, by helping to deliver more efficient and sustainable fishing methods, enhancing the monitoring of fishing activities, facilitating pollution prevention and clean-up and enhancing marine spatial planning. It can also allow for better research into and protection of the natural and cultural heritage of the oceans.

* A/CONF.230/1.

[1] Given the word limit, not all inputs have been included in their entirety, but they can be accessed at https://oceanconference.un.org/documents.

17-06999 (E) 120517

Please recycle

3. Scientific understanding of the ocean is fundamental in order to carry out effective management of the human activities that affect the marine environment and the biota that it contains. Scientific understanding is also fundamental in order to predict, forecast and mitigate changes to the ocean that may affect human lives and infrastructure over different spatial and temporal scales, and to help societies to adapt to those changes.

4. Ocean research and observation activities cover a wide range of interests, sectors, users and uses, and disciplines. All of these activities are of great importance in reaching the goal embedded in the United Nations Convention on the Law of the Sea to promote the equitable and efficient utilization of ocean resources, the conservation of their living resources and the study, protection and preservation of the marine environment.

5. The basis for various maritime industries is strong marine science and technology capability, and the development of human resources is essential to ensuring a better understanding of marine science and technology and their potential. States need to have not only full-time researchers but also technical support staff who service the equipment, computers and ships. Enhancing the skills and the knowledge base of academics, scientists, managers, field practitioners and local communities is critical.

6. The General Assembly has consistently called upon States and international financial institutions to continue to strengthen capacity-building activities in the field of marine scientific research by, inter alia, training personnel to develop and enhance relevant expertise, providing the necessary equipment, facilities and vessels and transferring environmentally sound technologies.[2]

7. Part XIII of the United Nations Convention on the Law of the Sea provides the legal framework for the conduct of marine scientific research. Under the Convention, States and competent international organizations are required to promote and facilitate the development and conduct of marine scientific research, as well as to promote international cooperation in such research. The Convention also provides for the obligation to make available by publication and dissemination information on proposed major programmes and their objectives as well as knowledge resulting from marine scientific research.

8. Transfer of marine technology is often considered as a tool to support capacity-building. Under part XIV of the Convention, States are required to cooperate in accordance with their capabilities to promote actively the development and transfer of marine science and marine technology on fair and reasonable terms and conditions. In addition to the 2030 Agenda for Sustainable Development, the need to facilitate the transfer of marine technology in order for countries to achieve sustainable use of the oceans and seas and their resources is also recognized in a number of international instruments related to sustainable development.[3]

---

[2] See, for example, General Assembly resolutions 61/222, 62/215, 63/111 and 64/71.

[3] These include the outcome document of the United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, from 20 to 22 June 2012, entitled "The future we want" (para. 160); the SIDS Accelerated Modalities of Action (SAMOA) Pathway (para. 58 (f)); and the annual General Assembly resolutions on oceans and the law of the sea. The transfer of marine technology is also part of the package of issues currently being discussed by the preparatory committee established pursuant to General Assembly resolution 69/292, on the development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

II. Status and trends

9. For the purpose of the dialogue, activities in relation to target 14.a of the Sustainable Development Goals can be classified into the following three clusters: (a) observation systems and knowledge base; (b) capacity-building; and (c) transfer of marine technology.

Observation systems and knowledge base

10. Key global activities in marine scientific research include the development of a permanent infrastructure to observe the ocean under the Global Ocean Observing System, the mandate of which has been expanded to include observation requirements for ocean health; the technical coordination of the established elements of the Global Ocean Observing System provided by the Joint Technical Commission for Oceanography and Marine Meteorology of the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO);[4] the integration of observations from multiple platforms through the WMO Integrated Global Observing System and the development of its 2040 vision for space- and surface-based observing systems; the development of ocean biological data repositories under the Ocean Biogeographic Information System; the global Earth system science approach under the World Climate Research Programme; projects of Future Earth (including the Integrated Marine Biosphere Research project); and global efforts to synthesize ocean research results into assessments of the state of the oceans under the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection and the special report of the Intergovernmental Panel on Climate Change on the ocean and cryosphere, the outline for which was recently approved. A long-term research effort in support of decision-making was represented by the decade-long Census of Marine Life, a partnership of 2,700 scientists from more than 80 States, the results of which were published in October 2010.

11. Several States have developed marine policies that encompass marine science and technology plans and strategies for building human and technical capacity in the area of ocean affairs and the law of the sea. A number of developing countries have also established specific infrastructure regarding marine science and technology, although they are at different levels of development.

12. Most States and relevant organizations have established institutional infrastructure to carry out specific activities or programmes related to marine science, such as oceanographic institutes. They may be national, regional or international in scope and influence. The Intergovernmental Oceanographic Commission is an intergovernmental cooperation mechanism on ocean sciences. Established in 1960, as at 11 February 2016 the Commission had 148 member States, representing 75 per cent of all independent States, but not all the parties to the United Nations Convention on the Law of the Sea.

13. United Nations entities are carrying out activities in relation to target 14.a of the Sustainable Development Goals, including strengthening the knowledge base on and implementing ecosystem approaches and maintaining information systems covering

[4] The Joint Technical Commission for Oceanography and Marine Meteorology is an intergovernmental body of technical experts that provides a mechanism for the international coordination of oceanographical and marine meteorological observation, data management and services through combining the expertise, technologies and capacity-building capabilities of the meteorological and oceanographical communities.

relevant scientific fields. One mechanism for tracking scientific knowledge and technology transfer is the Global Ocean Science Report of the Intergovernmental Oceanographic Commission, which will be issued in time for the Ocean Conference.

14. The Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, is the global mechanism for reviewing the state of the marine environment on a continual and systematic basis by providing regular assessments at the global and supraregional levels and an integrated view of environmental, economic and social aspects. The first global integrated marine assessment, which was the outcome of the first cycle of the Regular Process, is the first comprehensive report on the state of the world's oceans and knowledge about them, and supports the implementation of the 2030 Agenda. That and future assessments will play a decisive supporting role in ocean-related intergovernmental processes.

15. Another important role carried out by United Nations entities is to assure and promote the sustainability of observing systems, as most observing efforts are funded by research activities and programmes that are limited in time. Long-term, sustained and consistent ocean data series are required to address research needs and operational applications.

16. Efforts are also being made to extend observations to the deep ocean, allowing for the long-term (decadal and beyond) changes affecting the oceans and climate to be addressed, and thereby contributing to assessment reports of the Intergovernmental Panel on Climate Change.

17. Efforts are also ongoing at the regional level to strengthen the science-policy interface. In the Mediterranean region, the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and the General Fisheries Commission for the Mediterranean of the Food and Agriculture Organization of the United Nations (FAO) have both adopted their own strategies to accelerate progress towards the implementation of Sustainable Development Goal 14. Their midterm strategies include goals to strengthen the science-policy interface and citizens' understanding of marine and coastal issues.

18. Furthermore, with the support of the European Union, a specific science-policy interface and related process was established under the auspices of the Barcelona Convention to address science-policy interface needs for the regional implementation of the ecosystem approach.

Capacity-building

19. Several States provide training to developing countries in relation to a range of issues, including fisheries research; stock assessment; fisheries statistics; implementation of an ecosystem approach to management; data collection, handling and analysis; monitoring, control and surveillance; and underwater cultural heritage research and protection. Such assistance also involves institutional strengthening and technology transfer of mitigation devices for the protection of marine biodiversity.

20. The work of the Global Environment Facility on large marine ecosystems contributes to building technical and institutional capacity for the assessment and transboundary management of shared resources. The capacity-building strategy and programme of the Intergovernmental Oceanographic Commission is aimed at assisting States in developing and sustaining capacity in ocean sciences, observation and services. This includes the establishment of regional training centres through the Ocean Teacher Global Academy and other subregional bodies of the Commission. The International Seabed Authority has three active training streams, namely the Endowment Fund, through which it supports the participation of qualified researchers

from developing countries in cooperative research on the international seabed area; the Contractors training programme, through which personnel from developing States are provided with appropriate operational expertise, including at-sea training; and the internship programme. In addition, several ocean literacy networks are aimed at raising the awareness of citizens on how the ocean influences people and how people influence the ocean. These include the European Marine Science Educators Association and the Consortium for Ocean Science Exploration and Engagement. Moreover, under the Convention on the Protection of the Underwater Cultural Heritage, UNESCO organizes training in underwater archaeology and is supported by a university network comprising some 20 institutions. The Intergovernmental Oceanographic Commission and the Division for Ocean Affairs and the Law of the Sea of the Office of Legal Affairs of the Secretariat, in partnership with the Korea Maritime Institute, have developed a training course on marine scientific research under the United Nations Convention on the Law of the Sea, which is aimed at providing government officials with the knowledge required to conduct marine scientific research in accordance with the Convention.

Transfer of marine technology

21. The transfer of marine technology occurs on a regular basis through bilateral cooperation among States and through United Nations entities and international organizations such as the Intergovernmental Oceanographic Commission, the International Maritime Organization, FAO and the International Seabed Authority. Universities and research institutions also regularly undertake both capacity-building and technology transfer as part of their research activities in developing countries. The Criteria and Guidelines on the Transfer of Marine Technology of the Commission, which are mentioned specifically in target 14.a of the Sustainable Development Goals, constitute a reference document on the matter.

III. Challenges and opportunities

22. The ocean is still one of the least known areas of the world. Understanding of the processes that are taking place is currently not keeping pace with changes in the oceans. There is a need to better understand ecosystem processes and functions and their implications for ecosystem conservation and restoration, ecological limits, tipping points, socioecological resilience and ecosystem services. In particular, the effects of cumulative and socioeconomic impacts on biodiversity and ocean productivity are often not understood well enough for suitable political and business decisions to be made.

23. There are major knowledge gaps relating to many aspects of integrated coastal zone management. Many coastal areas are experiencing rising sea levels and extreme weather events that are causing widespread loss of life and the extensive destruction of infrastructure, settlements and facilities that support human livelihoods and existence. Therefore, there is a need to improve observation, coastal bathymetric data, the modelling and forecasting of extreme weather events and the development of multi-hazard early warning systems and risk management strategies that are embedded in integrated coastal management approaches. There is also a gap in terms of understanding species and the diversity of marine resources. Data and knowledge gaps exist with respect to pollution, including all aspects of the life cycle of marine debris, plastics and microplastics, heavy metals and other hazardous substances. The precise scope of the impact of acidification on the marine environment remains unclear, particularly in the polar regions. Further research is needed on ocean acidification, in particular in terms of observation and measurement, and increased scientific activity is required to better understand the

effects of climate change on the marine environment and marine biodiversity. There is still limited scientific understanding of the effectiveness and impact of conservation measures, including with regard to their socioeconomic benefits and how marine- and land-based human activities impact their effectiveness. The majority of underwater cultural heritage sites remain uncatalogued and unresearched, and therefore unprotected. The limited amount of scientific knowledge about areas beyond national jurisdiction means that the extent of impact and the productivity limits and recovery time of ecosystems and biodiversity in those areas cannot be easily predicted.

24. Ocean science needs to apply a holistic approach to understanding and addressing the cumulative impacts of threats such as climate change, acidification, pollution, coastal erosion and overfishing. There are opportunities for enhanced multidisciplinary and transdisciplinary research on oceans, with natural and social scientists working together with holders of relevant traditional knowledge to better understand the nature of the complex interactions between humans and marine and coastal ecosystems. Comprehensive databases, at the country and the regional levels, are required. Leading research institutions within each region should seek to work collaboratively and to ensure that research efforts are not duplicated and that limited resources are efficiently utilized.

Observation systems and knowledge base

25. The sustained ocean observing system of today has been developed over the last 20 to 30 years and represents an impressive achievement. However, it is largely funded through short-term research budgets. There is a need to strengthen and diversify support for sustained observations by, inter alia, ensuring that users clearly express and advocate for the need for sustained observations as the foundation of the required information.

26. Technology development in autonomous platforms, communications and sensors provides a tremendous opportunity, increasing the ability to measure more of the oceans (such as deep ocean and under the ice), measure more variables (chemistry and biology) more cost-effectively and deliver data more quickly. The Joint Technical Commission for Oceanography and Marine Meteorology is developing a strategy for the roll-out of new technologies across the observing networks.

27. The reliability of long-term climate change predictions in the Arctic and Antarctic is severely limited by the lack of systematic in-situ observations of and beneath the sea ice. For example, changes in the cryosphere in the oceans, and sea ice in particular, have a substantial impact on climate. It is critical to be able to understand and predict such changes on various timescales in order to support human activities in polar regions (e.g. maritime safety, navigation aids). Various United Nations entities, international organizations and actors are playing a role with regard to observations in polar regions, and there is a need to strengthen collaboration between them, establish partnerships and better integrate and sustain such activities in order to better address research and operational requirements.

28. Although the monitoring of the oceans is carried out under various programmes, the protocols used tend to be different, preventing comparisons and the harmonization of data. Efforts under the Joint Technical Commission for Oceanography and Marine Meteorology are aimed at evaluating the standards and best practices (from sensor calibration to data delivery) used across the observing networks, in order to ensure that data can be delivered using a variable of known quality. The existing monitoring and assessment practices of regional sea conventions already provide a key knowledge base on the status of the marine (and

coastal) environment, which could be further built on and should be the basis of further harmonization at the national, regional and international levels.

29. Ocean research or related services and the acquisition of sufficient credible scientific data and information are still weak in many countries because of their high cost. National ocean research policies to support sustainable development plans are rare. The establishment of the Regular Process has improved the science-policy interface at the global level and it is hoped that it will also contribute to enhancing it at the regional and national levels. However, gaps remain in the ability to integrate the results of scientific research into policy development.

30. In many countries, higher education is heavily dependent on the type and expertise of guest researchers. Technical education in marine-related fields is often non-existent or inadequate. Infrastructure for marine research is often weak, inadequate or in need of upgrading. There is often an overdependence on project-oriented, short-term international support.

31. Developing countries have expressed the need for the availability of data and information that are reliable and accessible through appropriate data centres, such as those of the International Oceanographic Data and Information Exchange of the Intergovernmental Oceanographic Commission. The international exchange of climate-relevant data, such as coastal interface data, in particular on sea levels, waves and storm surges, is also critical for the delivery of climate services and management.

32. It has been noted that inadequate scientific support systems prevent the full participation of small island developing States in global ocean science programmes.

33. There is a need to undertake marine scientific research and develop the associated technological capacity of small island developing States, including through the establishment of dedicated national and regional marine scientific and technological centres, in accordance with part XIV of the United Nations Convention on the Law of the Sea and the provision of technical assistance.

34. Finally, there is a gap in the collective capacity to effectively measure progress in many areas of Sustainable Development Goal 14. Although indicators have been developed for all targets under the Goal, gathering data on many of those indicators is a challenge. Currently, the Global Sustainable Development Goal Indicators Database[5] contains information on only two indicators for targets under Goal 14, namely indicators 14.4.1 and 14.5.1.[6] To date, no global database containing information related to indicator 14.a.1 exists. While general information on investments toward research and development is available, the multidisciplinary character of ocean science and marine technology transfer makes it difficult to classify.

35. Opportunities in relation to ocean research and education include the following: (a) strengthening the human resources and infrastructure of universities and technical institutions; (b) continuing the education of locally available capacity through involvement in capacity-building activities; (c) supporting measures to retain existing capacity in marine sectors; (d) promoting the establishment of consortiums of higher education on the appropriate geographical scale; (e) establishing and maintaining a register of infrastructure open to international cooperation to facilitate access for developing countries; (f) promoting further scientific research in the area beyond

[5] The report will contain a summary of information about the status of ocean research, investment in research infrastructure and human capacity, as well as potential gaps in marine sciences programmes in need of further investment. The Inter-Agency and Expert Group on Sustainable Development Goal Indicators agreed that parts of the report would be used to monitor the indicator for target 14.a of the Goals.

[6] http://unstats.un.org/sdgs/indicators/database.

national jurisdiction to fill data gaps and enhance understanding; (g) promoting the development of public information (communications) departments in ocean research institutions; (h) fostering the development of ocean literacy programmes as communities of practice to share experience within and across regions; and (i) promoting and assisting with the development of alumni scientific networks. In addition, countries could consider establishing ocean science advisory bodies at the national level in order to strengthen the science-policy interface.

Capacity-building

36. Gaps in capacity-building hamper the efforts of less developed countries to take advantage of what the ocean can offer them and reduce their capability to address the factors that degrade the ocean. Although many international training initiatives on marine sciences exist, no comprehensive global catalogue of such efforts exists to date.

37. In the follow-up to the United Nations Conference on Sustainable Development, the Intergovernmental Oceanographic Commission conducted a baseline study to assess national capacities and needs in marine research, observation and data and information management.[7] The assessment showed that requirements and priorities for capacity-building varied from region to region, and that capacity-building interventions needed to adapt to regional priorities. The first global integrated marine assessment identified the following common capacity-building needs in relation to marine research across regions: (a) data accessibility and data-sharing; (b) mentoring and training opportunities for less experienced scientists and practitioners; (c) data collection and marine habitat mapping to inform the management of ecosystems, biodiversity and fisheries; (d) improving professional capacities to assess socioeconomic issues; and (e) countering the lack of capacity to conduct integrated and ecosystem services assessments.

38. Training and retaining staff in small Pacific countries is a critical need. Brain drain is a concern in many developing countries, with trained staff often leaving to take international positions. This challenge can be addressed by making changes to the support provided to staff, the working culture and the quality of staff positions available, in order to attract and maintain national staff.

39. Efforts to build capacity in developing countries must be intensified, in particular in the least developed countries and small island developing States, as well as coastal African countries.

40. Opportunities include the following: (a) establishing a global mechanism for reporting on training and capacity-building activities in ocean science, hence facilitating access to scientists; (b) providing technical support for the development of national ocean research plans in accordance with national development plans and ocean policy processes; (c) exploring the possibility of creating regional training centres of excellence, especially to address the issues faced by coastal island developing States; and (d) seeking support from Member States with ship capabilities for ship time and exploring ship-sharing mechanisms. Capacity-building efforts in marine sciences, including training programmes, need to take a long-term perspective. In addition to providing traditional capacity-building assistance through North-South cooperation, South-South cooperation can be used to foster capacity-building partnerships and to develop initiatives to systematically take advantage of the pool of experienced national experts for capacity-building activities.

41. In its resolution 71/257, the General Assembly decided to establish the Technology Bank for the Least Developed Countries, to strengthen those countries'

[7] Resolution 66/288, annex.

science, technology and innovation capacities, foster the development of national and regional innovation ecosystems and generate home-grown research.

Transfer of marine technology

42. In spite of its importance, as reflected in the United Nations Convention on the Law of the Sea and many international documents, the transfer of marine technology seems to be insufficiently monitored. Most developing States are inadequately equipped to be able to fully benefit from ocean activities and resources and to deal with impacts on the marine environment. They continue to express the need for the development of technology, its transfer and technical assistance. Furthermore, most developing States are inadequately equipped to deal with the environmental impacts of ocean use.

43. For a number of countries, in particular small island developing States, oceans represent a potential for building strong, innovative and resilient economies. Identifying context-specific options for ocean-based economic activities and incorporating them into coherent science and technology roadmaps that support national development strategies will be critical to those efforts. In that context, it is intended that the Technology Bank for the Least Developed Countries will promote and facilitate the identification, utilization and access of appropriate technologies, as well as their transfer to the least developed countries, while respecting intellectual property rights and fostering the national and regional capacity of the least developed countries for the effective utilization of technology to bring about transformative change.

44. States have been encouraged to make further use of the Criteria and Guidelines on the Transfer of Marine Technology of the Intergovernmental Oceanographic Commission. It was noted that trade can be an important tool to facilitate and accelerate the dissemination of environmental technologies around the world, including those that contribute to ocean health and the conservation of marine resources.

IV. Existing partnerships

45. A great number of partnerships cover various aspects of target 14.a of the Sustainable Development Goals, with some of them covering multiple targets of Goal 14.[5] These partnerships involve a range of stakeholders and modalities. Stakeholders include States, intergovernmental organizations, international and national non-governmental organizations, scientific institutions, networks and consortia, foundations and other private entities. United Nations organizations are involved in many partnerships, often in relation to one of their core mandates. Some partnerships contribute to the science-policy interface.

46. Beyond the global observation systems mentioned above, examples of partnerships identified in the submissions for the Ocean Conference included the Partnership for Observation of the Global Ocean, the Argo Program, which comprises a fleet of 4,000 global array of temperature- and salinity-profiling floats; 150 partnerships with Google and Global Fishing Watch; the Pacific Islands Universities Research Network; the Pacific Islands Global Ocean Observing System; the Division for Ocean Affairs and the Law of the Sea; Intergovernmental Oceanographic Commission and Korea Maritime Institute training courses on the conduct of marine scientific research under the United Nations Convention on the

[5] See http://www.un.org/en/sustainabledevelopment/wp-content/uploads/2017/05/Partnerships-SDG-Compendium_2017.pdf for the Ocean Conference.

Law of the Sea; and the Global Universities Partnership on Environment and Sustainability. The European Union Horizon 2020-funded Project BlueBRIDGE and the iMarine initiative offer a framework for future partnership development to address gaps. The secretariat of the Convention on Biological Diversity coordinates the Sustainable Ocean Initiative, a global capacity-building partnership that supports the achievement of the Aichi Biodiversity Targets and relevant Sustainable Development Goals.

47. To promote observations in polar regions, the World Climate Research Programme and the Prince Albert II of Monaco Foundation are promoting, together with other co-sponsors, the Polar Challenge. A reward will be given to the first team to complete a 2,000-km continuous mission under the Arctic or Antarctic sea ice using an autonomous underwater vehicle.

48. The relatively large number of partnerships addressing science and technology issues in relation to oceans may conceal limited effectiveness, lack of resources, fragmentation and duplication. More work is needed ... assess their impact as a whole, as well as their impact on individual countries or groups of countries.

49. The Technology Facilitation Mechanism, set up pursuant to the 2030 Agenda, seeks to advance knowledge-sharing and multi-stakeholder collaborations through which science, technology and innovation can accelerate progress towards achieving the Sustainable Development Goals. As a component of the Mechanism, the annual Science, Technology and Innovation Forum provides opportunities to take those collaborations forward with regard to Goal 14. Its online platform, currently in development, will also facilitate such exchanges in the future.

V. Possible areas for new partnerships

50. Submissions made as part of the preparations for the Ocean Conference in terms of areas for new partnerships included the following:

(a) New partnerships could focus on capacity-building activities, in particular in developing countries, in the field of marine scientific research, as well as on transfer of marine technology;

(b) Strategic partnerships between United Nations entities and innovative and research institutes could add value by filling existing capacity gaps. Partnerships could be developed with the Intergovernmental Oceanographic Commission, the United Nations Environment Programme, large marine ecosystem programmes, local and international reference innovation and regional marine science associations;

(c) Regional or subregional centres could be used as hubs to deliver a suite of activities covering the whole spectrum of needs for marine scientific research in relation to Sustainable Development Goal 14 and associated capacity-building;

(d) Under the auspices of the Intergovernmental Oceanographic Commission and the International Hydrographic Organization, the General Bathymetric Chart of the Oceans is planning to launch "Seabed 2030: a roadmap for future ocean floor mapping";

(e) [illegible] the Canadian Centre, the Intergovernmental Oceanographic Commission is considering launching a long-term international ocean science initiative to support the implementation of the 2030 Agenda. Building on the capacity needs identified in the Global Ocean Science Report, a dedicated capacity development fund could be established to facilitate the transfer of technology and

the development of ocean research infrastructure in developing countries, especially small island developing States and the least developed countries;

(f) Country experts could be trained and supported by cross-boundary learning experiences, such as internships or training fellowships, to support implementation;

(g) National ocean advisory councils, with national and regional mentoring support, could support national coastal and marine management and progress towards achieving Goal 14;

(h) The creation of a Pacific ocean research alliance, supporting the policy and sectoral approaches of the Pacific Ocean Alliance and the Marine Sector Working Group of the secretariat of the Pacific Regional Environment Programme;

(i) Partnerships to train and retain staff in small Pacific countries;

(j) Developing a dedicated segment on ocean-related science and technology under the technology facilitation mechanism that Member States decided, in the Addis Ababa Action Agenda of the Third International Conference on Financing for Development, to establish, while avoiding duplication with other existing mechanisms in that area;

(k) A new partnership, building on existing efforts, for the enhancement of a global El Niño information system to enable scientists to better predict the El Niño/Southern Oscillation and other ocean oscillations;

(l) Strengthening maritime and coastal safety services, in particular for small island developing States and the least developed countries (including early warning of coastal inundation, optimization of search and rescue and environmental emergencies and operations, and investigation of cost recovery mechanisms for marine services).

VI. Guiding questions for the dialogue

51. The following questions could be considered during the dialogue:

(a) How can partnerships help the international community enhance scientific understanding of the functioning of the ocean and its interactions with human systems?

(b) How can it be ensured that capacity-building and technology transfer meet the identified needs of developing countries in the long run, moving away from project-based funding and externally identified priorities?

(c) Do technological developments (autonomous platforms, new sensors) and data-streaming frontiers (deep ocean, under ice) represent opportunities to bring in new partners to sustained observations? What types of partnerships could be put in place to encourage and foster transfer the transfer of major technologies to developing countries?

(d) What partnerships are needed to create science and technology roadmaps that support strong, innovative and resilient ocean-based economies in small island developing States?